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THE IBIS,

A

QUARTERLY JOURNAL OF ORNITHOLOGY.

EDITED BY

PHILIP LUTLEY SCLATER, M.A., Ph.D., F.R.S.,

SECRETARY TO THE ZOOLOGICAL SOCIETY OF LONDON,

AND

HOWARD SAUNDERS, F.L.S., F.Z.S.

VOL. I. 1895.

SEVENTH SERIES.

Non moriar, sed vivam, et narrabo opera Domini.

LONDON:
GURNEY AND JACKSON, 1 PATERNOSTER ROW.
(SUCCESSORS TO J. VAN VOORST.)
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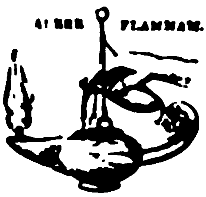
ALERE FLAMMAM.

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

PREFACE.

On completing the first volume of the Seventh Series of 'The Ibis,' the Editors have a few remarks to offer to the Members of the British Ornithologists' Union.

It will be observed, perhaps, that the present volume is not quite so thick as some of those which have immediately preceded it. This is owing to the fact that it will shortly be necessary to pay, out of the funds of the Union, for the General Index to the Fourth, Fifth, and Sixth Series of this Journal, which, as was agreed at the last Annual General Meeting, is now being proceeded with under the superintendence of Mr. Salvin. Under these circumstances it was thought by the Committee that it would be expedient to effect a slight economy in expenditure by reducing the number of pages in the present volume; and the Editors have accordingly deferred until the next issue several papers which might have formed part of the present number.

The Editors are pleased to have been able to publish two important memoirs on Pterylosis in the present volume. They are of opinion that more attention should be devoted to this important branch of Ornithology, and they trust that some of the younger Members of the Union will take up the subject. Even among British birds there is ample material to be found for such investigations.

P. L. S.
H. S.

September 30th, 1895.

BRITISH ORNITHOLOGISTS' UNION.

1895.

[An asterisk indicates an Original Member. It is particularly requested that Members will give notice to the Secretary of the Union, 10 Chandos Street, London, W., of any error in their addresses or descriptions in this List, in order that it may be immediately corrected.]

Date of Election.

1895. Bulgaria, H.R.H. Ferdinand, Prince of; Sophia, Bulgaria.

1893. Anne, Major Ernest L. S.; 21 Victoria Square, Newcastle-on-Tyne.

1887. Aplin, Frederick Charles; Bodicote, Banbury, Oxon.

1888. Aplin, Oliver Vernon; Bloxham, Banbury, Oxon.

5 1885. Backhouse, James, F.Z.S.; Daleside, Harrogate.

1892. Baker, E. C. Stuart; District Superintendent of Police, Gunjong, Cachar, Assam, India; care of H. S. King & Co.

1889. Balston, Richard James, F.Z.S.; Springfield, Maidstone.

1890. Barclay, Francis Hubert; Knott's Green, Leyton.

1872. Barclay, Colonel Hanbury, F.Z.S.; Tingrith Manor, Woburn, Bedfordshire.

10 1885. Barclay, Hugh G.; Colney Hall, Norwich.

1884. Barnes, Lieut. Henry E., F.Z.S.; Commissariat Officer, Nasirabad, India.

1889. Barrett-Hamilton, Gerald E. H.; Kilmannock House, New Ross, Wexford.

1881. Barrington, Richard Manliffe, LL.B.; Fassaroe, Bray, co. Wicklow.

1884. Beddard, Frank E., M.A., F.R.S., F.Z.S., Prosector to the Zoological Society of London; Zoological Gardens, Regent's Park, N.W.

15 1880. Bidwell, Edward; 1 Trig Lane, Upper Thames Street, E.C.

1884. Bingham, Lt.-Col. Charles T. (Indian Staff Corps), F.Z.S.; 18 Hills Road, Abbey Road, St. John's Wood, N.W.

1892. Bird, The Rev. Maurice C. H., M.A.; Brunstead Rectory, Stalham, Norfolk.

1891. Blaauw, F. E., C.M.Z.S.; s'Graveland, Hilversum, Holland.

1893. Blagg, Ernest W. H.; Greenhill, Cheadle, Staffordshire.

Date of Election.

20 1873. Blanford, William T., F.R.S., F.Z.S.; 72 Bedford Gardens, Kensington, W.

1893. Bolam, George, F.Z.S.; Castlegate, Berwick-on-Tweed.

1894. Bonhote, John Lewis; 68 Lexham Gardens, Kensington, W.

1878. Borrer, William, M.A., F.L.S.; Cowfold, Horsham.

1895. Bradford, Dr. J. Rose, F.R.S.; 52 Upper Berkeley Street, Portman Square, W.

25 1885. Brockholes, William F.; Claughton-on-Brock, Garstang, Lancashire.

1890. Brooke, Harry Brinsley; 33 Egerton Gardens, Kensington, W.

1892. Brooks, W. Edwin; Mount Forest, Ontario, Canada.

1868. Buckley, Thomas Edward, B.A., F.Z.S.; Rossal, Inverness N.B.

1872. Buller, Sir Walter Lawry, K.C.M.G., Sc.D., F.R.S., C.M.Z.S.; Wellington, New Zealand.

30 1884. Butler, Lieut.-Col. E. A.; Brettenham Park, Bildeston, Suffolk.

1884. Buxton, Geoffrey Fowell; Sunny Hill, Thorpe, Norwich.

1895. Buxton, S. Gurney, F.Z.S.; Catton Hall, Norwich.

1889. Cameron, Ewen Somerled, F.Z.S.; Terry, Montana, U.S.A.

1888. Cameron, John Duncan; Low Wood, Bethersden, near Ashford, Kent.

35 1892. Campbell, Charles William, C.M.Z.S.; H.B.M. Consular Service, China; British Legation, Peking.

*Campbell-Orde, Sir John W. P., Bart., F.Z.S., late Captain 42nd (Royal Highland) Regiment; Kilmory House, Lochgilphead, Argyllshire, N.B.

1888. Carter, James; Burton House, Masham, Yorkshire.

1890. Cave, Charles John Philip, F.Z.S.; Ditcham Park, Petersfield.

1888. Chamberlain, Walter, F.Z.S.; Harborne Hall, Harborne, near Birmingham.

40 1894. Chance, A. Macomb, Jun., B.A.; Lawnside, Edgbaston, Birmingham.

1884. Chapman, Abel; 7 The Avenue, Sunderland.

1894. Chapman, Edward Henry; 17 St. Hilda's Terrace, Whitby.

1882. Chase, Robert William; Southville, Priory Road, Edgbaston, Birmingham.

1889. Clarke, Stephenson Robert, F.Z.S.; 25 Chesham Street, S.W., and Croydon Lodge, Croydon, Surrey.

45 1880. Clarke, William Eagle, F.L.S.; Museum of Science and Art, Edinburgh.

Date of Election.

1895. Coles, Richard Edward; Oakfield, Milton, Lymington.

1880. Cooper, Lieut.-Col. E. H., F.Z.S.; 42 Portman Square, London, W.

1874. Cordeaux, John; Great Cotes, R.S.O., Lincoln.

1888. Cordeaux, Captain William Wilfrid; Sialkote, India.

50 1882. Cory, Charles B., F.Z.S.; Third National Bank, State Street, Boston, Mass., U.S.A.

1892. Courage, Harold Mitchell; Snowdenham, Bramley, Guildford.

1894. Crewe, Sir Vauncey Harpur, Bt.; Calke Abbey, Derbyshire.

1895. Crossley, Sir Savile B., Bt., F.Z.S.; Somerleyton, Lowestoft, and 12 Carlton-House Terrace, S.W.

1882. Crowley, Philip J., F.Z.S.; Waddon House, Waddon, Croydon.

55 1877. Dalgleish, John J.; Brankston Grange, Bogside Station, Stirling, N.B.

1874. Danford, Charles G., F.Z.S.; Hatszeg, Siebenbürgen, Hungary, and Conservative Club, St. James's Street, London, S.W.

1883. Davidson, James; Karwar, Kanara, Bombay, and 32 Drumsheugh Gardens, Edinburgh.

1891. De Vis, C. W., Queensland Museum, Brisbane; care of Williams and Norgate, 14 Henrietta Street, Covent Garden, W.C.

1893. De Winton, W. E.; Graftonbury, Hereford, and 38 Great Russell Street, W.C.

60 1889. Dobie, William Henry, M.R.C.S.; 22 Upper Northgate Street, Chester.

1883. Doig, Scrope B.; Public Works Department, Bombay.

1895. Donovan, Surgeon-Capt. C., I.M.S., Civil Surgeon; Mangalore, South Canara, India.

1880. Dowsett, Arthur, F.Z.S.; Castle Hill House, Reading.

1865. Dresser, Henry Eeles, F.L.S., F.Z.S.; Topclyffe Grange, Farnborough, Beckenham, Kent.

65 *Drummond-Hay, Lieut.-Col. Henry Maurice, C.M.Z.S. (Royal Perth Rifles); Seggieden, Perth.

1890. Drummond-Hay, James A. G. (Coldstream Guards); Guards' Club, Pall Mall, S.W.

1878. Durnford, W. Arthur, J.P.; Elsecar, Barnsley.

1870. Elliot, Daniel Giraud, F.R.S.E., F.Z.S.; Field Columbian Museum, Chicago, U.S.A.

Date of Election.

1895. Elliot, Edmund A. S., M.R.C.S.; Woodville, Kingsbridge, South Devon.

70 1884. Elliott, Algernon, Deputy Commissioner, Yeotmahl, Berar, H.A.D., India.

1866. Elwes, Henry John, F.Z.S.; Colesborne Park, Cheltenham.

1895. Erlanger, Freiherr Carlo von; Nieder Ingelheim, Rhein Hessen, Germany.

1879. Evans, Arthur Humble, M.A., F.Z.S.; 9 Harvey Road, Cambridge.

1888. Evans, William, F.R.S.E.; 18a Morningside Park, Edinburgh.

75 1891. Everett, Alfred Hart, C.M.Z.S.; Labuan, Borneo.

1892. Fairbridge, William George; 133 Long Market Street, Capetown.

1895. Falconer, John J. M.; Magdalene College, Cambridge.

1894. Farquhar, Commander Arthur M., R.N.; H.M.S. 'Buzzard,' North American and West Indian Station.

1873. Feilden, Col. Henry Wemyss, C.M.Z.S.; West House, Wells, Norfolk, and Junior United Service Club, St. James's, S.W.

80 1886. Ferguson, Lieut. Harold Stuart, Nair Brigade; Trevandrum, Travancore.

1891. Field, Leopold; St. Stephen's Club, Bridge Street, Westminster, S.W.

1892. Finn, Frank, B.A., F.Z.S.; Indian Museum, Calcutta.

1890. Fisher, Lionel; Kandy, Ceylon.

1884. Forbes, Henry Ogg, F.Z.S.; Free Public Museum, Liverpool.

85 1880. Foster, William; Braeside, The Heath, Weybridge.

1887. Fowler, William Weekes, M.A.; Lincoln College, Oxford.

1865. Fox, Rev. Henry Elliott, M.A.; 12 South Bailey, Durham.

1881. Freke, Percy Evans; 9 Sydenham Road, Dundrum, co. Dublin.

1895. Frohawk, Frederick William; 39 Dornton Road, Balham, S.W.

90 1881. Gadow, Hans, Ph.D., F.Z.S.; University Zoological Museum, Cambridge.

1880. Gainsborough, Charles William Francis, Earl of; Exton Park, Oakham.

1885. Gallwey, Sir Ralph Payne, Bart.; Thirkleby Park, Thirsk.

Date of Election.

1892. Gerrard, John; Government Inspector of Mines; Worsley, Manchester.

1879. Gibson, Ernest; care of Thos. Gibson, Esq., 1 Eglinton Court, Edinburgh.

95 1879. Gibson-Carmichael, Sir Thomas David, Bart., F.Z.S.; Castle Craig, Dolphinton, N.B.

*Godman, Frederick DuCane, F.R.S., F.Z.S.; 10 Chandos Street, Cavendish Square, W.

*Godman, Percy Sanden, B.A., C.M.Z.S.; Muntham, Horsham.

1874. Godwin-Austen, Lieut.-Col. Henry Haversham, F.R.S., F.Z.S.; Shalford House, Guildford.

1884. Goodchild, John G., F.Z.S.; Museum of Science and Art, Edinburgh.

100 1895. Grabham, Oxley, M.A.; Westfield, Flaxton, York.

1886. Graham, William, F.Z.S.; Manor House, Crayford, Kent.

1890. Grant, William R. Ogilvie; 26 Hereford Square, S.W.

1885. Guillemard, F. H. H., M.A., M.D., F.Z.S.; Eltham, Kent.

1876. Günther, Albert C. L. G., M.A., M.D., F.R.S., F.Z.S.; Keeper of the Zoological Department, British Museum (Natural History), Cromwell Road, S.W.

105 1870. Gurney, John Henry, F.Z.S.; Keswick Hall, Norwich, and Athenæum Club, Pall Mall, S.W.

1890. Gwatkin, Joshua Reynolds Gascoign; Manor House, Potterne, Devizes.

1891. Haigh, George Henry Caton; Grainsby Hall, Great Grimsby, Lincolnshire.

1887. Haines, John Pleydell Wilton; The Lodge, Gloucester.

1886. Hamilton, Edward, M.D., F.L.S., F.Z.S.; 16 Cromwell Place, S.W.

110 1883. Harcourt, Lewis Vernon; Malwood, Lyndhurst, Hants.

1876. Harford, Major H. C. (2nd Wilts); Glen Froome, Nelson Crescent, Southsea.

1893. Hartert, Ernst; The Museum, Tring, Herts.

1868. Harting, James Edmund, F.L.S., F.Z.S.; Linnean Society, Burlington House, Piccadilly, W.

1893. Hartmann, William; Tangley Mere, Chilworth, Surrey.

115 1873. Harvie-Brown, John A., F.Z.S.; Dunipace House, Larbert, N.B.

1887. Hebbert, Charles T., F.Z.S.; The Rhodrons, Hook, Kingston-on-Thames.

Date of Election.

1895. Hinxman, Lionel W., B.A.; Geological Survey of Scotland, Edinburgh.

1884. Holdsworth, C. J.; Ellesmere Park, Eccles, near Manchester.

1877. Holdsworth, Edmund W. H., F.Z.S.; South Town, Dartmouth, Devon.

120 1891. Holland, Arthur H.; Sta. Elena, Soler, Ferro-Carril al Pacifico, Buenos Ayres, and Holmhurst, Copse Hill, Wimbledon, S.W.

1888. Horsfield, Herbert Knight; Ivy Lodge, Chapel Allerton, Leeds.

1893. Hose, Charles, F.Z.S.; Baram, Sarawak, Borneo.

1895. Howard, Henry Eliot; Stone House, Kidderminster.

1881. Howard, Robert James; Hawkhurst, Blackburn, Lancashire.

125 *Hudleston, Wilfrid Hudleston, M.A., F.R.S., F.Z.S.; 8 Stanhope Gardens, S.W.

1893. Hudson, William Henry, C.M.Z.S.; Tower House, St. Luke's Road, Westbourne Park, W.

1869. Hume, Allan Octavian, C.B., C.S.I., F.Z.S.; The Chalet, Kingswood Road, Upper Norwood, S.E.

1890. Hunter, Henry Charles Vicars; Mawley Hall, Cleobury Mortimer, Salop.

1870. Hylton, Hedworth Hylton, Lord, F.Z.S.; Merstham House, Red Hill, Surrey.

130 1870. Irby, Lieut.-Col. Leonard Howard L., F.Z.S.; 14 Cornwall Terrace, Regent's Park, N.W.

1888. Jackson, Frederick J., F.Z.S.; 13 Westbourne Square, W.

1892. James, Henry Ashworth; 11 Oxford Square, Hyde Park, W.

1889. Johnson, Frederick Ponsonby; Castlesteads, Brampton, Cumberland.

1891. Johnston, Henry Hamilton, C.B., F.Z.S.; The Residency, Zomba, British Central Africa.

135 1880. Kelham, Major Henry Robert (2nd Bn. Highland Light Infantry); Fyzabad, Oudh, India, and Roydon Lodge, Camberley, Surrey.

1894. Kelsall, Henry Joseph, R.A.; Royal Artillery, Allahabad, N.W.P., India.

1892. Kermode, Philip M. C.; Hillside, Ramsay, Isle of Man.

1891. Kerr, J. Graham; Christ's College, Cambridge.

1895. Kingsford, William Edward; Ashdene, East Molesey, Surrey.

Date of Election.

140 1892. Knight, Francis Arnold; Brynmelyn, Weston-super-Mare.

1882. Knubley, Rev. Edw. Ponsonby, M.A.; Staveley Rectory, Leeds.

1892. Laidlaw, Thomas Geddes; Bank of Scotland, Morningside Branch, Edinburgh, and 8 Morningside Road, Edinburgh.

1884. Langton, Herbert; 11 Marlborough Place, Brighton.

1881. Lascelles, Hon. Gerald; Queen's House, Lyndhurst.

145 1892. La Touche, John David Digues de; Chinese Imperial Maritime Customs, Amoy, China.

1892. Laws, Arthur Moore; P.O., Box 185, Johannesburg, Transvaal.

1885. Lawson, George, C.B.; 36 Craven Hill Gardens, Hyde Park, W.

1876. Legge, Col. William Vincent, late R.A., F.Z.S.; Cullenswood House, St. Mary's, Tasmania.

1868. Le Strange, Hamon, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.

150 1875. Le Strange, Col. Paget Walter, R.A.; Llwynbedw, Boncastle, R.S.O., South Wales.

1893. Lewis, Frederick; Assistant Conservator of Forests, Ratnapura, Ceylon.

1889. Leyland, Christopher John; Haggerston Castle, Beal, Northumberland.

*Lilford, Thomas Lyttleton, Lord, F.L.S., F.Z.S.; Lilford Hall, Oundle.

1874. Lloyd, Col. John Hayes, F.Z.S.; 95 Adelaide Road, N.W.

155 1889. Loyd, Major Arthur Purvis, F.Z.S. (late 21st Hussars); 3 Queen's Mansions, Victoria Street, S.W.

1877. Lumsden, James, F.Z.S.; Arden House, Alexandria, N.B.

1894. Macpherson, Arthur Holte; 51 Gloucester Terrace, Hyde Park, W.

1886. Macpherson, Rev. Hugh Alexander, M.A.; 11 Victoria Place, Carlisle.

1875. Malcolm, John Wingfield, F.Z.S.; 7 Great Stanhope Street, Mayfair, W.

160 1878. Marks, Henry Stacy, R.A., F.Z.S.; 5 St. Edmund's Terrace, Regent's Park, N.W.

1894. Marshall, Archibald McLean; Crowhill, Innerwick, E. Lothian.

1894. Marshall, James McLean; Crowhill, Innerwick, E. Lothian.

1878. Mathew, Rev. Murray A., M.A., F.L.S.; Buckland Dinham, Frome, Somersetshire.

Date of Election.

1883. Meade-Waldo, Edmund Gustavus Bloomfield, F.Z.S.; Rope Hill, Lymington, Hants.

165 1886. Millais, John Guille, F.Z.S.; Melwood, Horsham.

1879. Mitchell, Frederick Shaw; Edmonton, Alberta, N. W. T., Canada.

1892. Mivart, St. George, Ph.D., M.D., F.R.S.; Oriental Club, Hanover Square, W.

1890. Monk, Thomas James; St. Anne's, Lewes, Sussex.

1886. Muirhead, George, F.Z.S.; Mains of Haddo, Aberdeen.

170 1893. Mullens, William H., M.A., F.Z.S.; 9 St. James's Place, S.W.

1892. Munn, Philip Winchester; Laverstoke, Whitchurch, Hants.

1885. Neale, Edward; 43 Charlotte Street, Portland Place, W.

1882. Nelson, Thomas Hudson; Sandringham House, Redcar, Yorkshire.

1895. Nesham, Robert; Utrecht House, Queen's Road, Clapham Park, S.W.

175 1876. Nevill, Hugh; Newton Villa, Godalming.

1872. Newcome, Francis D'Arcy William Clough; Feltwell Hall, Brandon, Suffolk.

*Newton, Alfred, M.A., F.R.S., F.Z.S., Professor of Zoology in the University of Cambridge; Magdalene College, Cambridge.

*Newton, Sir Edward, K.C.M.G., M.A., F.L.S., C.M.Z.S.; 14 Wellington Esplanade, Lowestoft.

1891. Nicholl, Digby Seys Whitlock, F.L.S., F.Z.S.; The Ham, Cowbridge, Glamorganshire.

180 1886. Nicholls, Howard Hill John, M.R.C.S.; The Moat, Eastbourne.

1876. Nicholson, Francis, F.Z.S.; Oakfield, Ashley Rd., Altrincham.

1895. Noble, Heatley; Temple Combe, Henley-on-Thames.

1887. Norman, George Cameron, F.Z.S.; 68 Lombard Street, E.C.

1882. Oates, Eugene William, F.Z.S.; Mandalay, Burma.

185 1892. Ogilvie, Fergus Menteith, M.A., F.Z.S.; 5 Evelyn Mansions, Carlisle Place, Victoria Street, S.W.

1889. Ogle, Bertram Saville; Hill House, Steeple Aston, Oxford.

1883. Parker, Henry, C.E., F.Z.S., Irrigation Officer, P.W.D.; Kurunegala, Ceylon.

1880. Parkin, Thomas, M.A., F.Z.S.; Fairseat, High Wickham, Hastings.

1891. Patterson, Robert; Tilecote, Malone Park, Belfast.

Date of Election.

190 1884. Patterson, R. Lloyd, F.L.S.; Croft House, Holywood, co. Down.

1894. Pearson, Charles Edward; Chilwell House, near Nottingham.

1891. Pearson, Henry J.; Bramcote, Notts.

1891. Penrose, Frank, F.R.C.S.; 4 Harley Street, W.

1886. Phillips, E. Lort, F.Z.S.; 79 Cadogan Square, S.W.

195 1888. Phillips, George Thorne; Wokingham, Berkshire.

1893. Pigott, Thomas Digby, C.B.; 5 Ovington Gardens, S.W.

1883. Pike, Thomas Mayer, M.A.; care of R. H. Porter, 18 Princes Street, Cavendish Square, W.

1888. Powys, Mervyn Owen Wayne, B.A., F.Z.S.; 2 Tenterden Street, Hanover Square, W.

1893. Pycraft, William Plane; Department of Comparative Anatomy, University Museum, Oxford.

200 1888. Radclyffe, Charles Robert Eustace; 1st Life Guards, and Hyde, Wareham, Dorset.

1879. Rawson, Herbert Evelyn, F.Z.S.; Fallbarrow, Windermere.

1894. Read, Richard Henry, L.R.C.P., M.R.C.S.; Church Street, Hanley.

1888. Read, Robert H.; 7 South Parade, Bedford Park, W.

1877. Reid, Capt. Savile G., late R.E., F.Z.S.; Thornhaugh, Swanage, Dorset.

205 1893. Rendall, Percy, M.D., F.Z.S.; Fort Johnston, Lake Nyassa, British Central Africa.

1895. Rickett, Charles Boughey; Hong Kong and Shanghai Bank, Foochow; care of H. S. King & Co.

1894. Rothschild, The Hon. Charles; Tring Park, Tring.

1893. Rothschild, The Hon. L. Walter, F.Z.S.; Tring Park, Tring, Herts.

1883. St. Quintin, William Herbert, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

210 *Salvin, Osbert, M.A., F.R.S., F.Z.S.; 10 Chandos Street, W., and Hawksfold, Fernhurst, Haslemere.

1870. Saunders, Howard, F.L.S., F.Z.S.; 7 Radnor Place, Hyde Park, W.

*Sclater, Philip Lutley, M.A., Ph.D., F.R.S.; Secretary to the Zoological Society of London, 3 Hanover Square, W., and Odiham Priory, Winchfield.

1891. Sclater, William Lutley, M.A., F.Z.S.; Eton College, Windsor.

Date of Election.

1881. Scully, Surgeon-Lt.-Col. John, F.L.S., F.Z.S.; care of Messrs. H. S. King & Co., 65 Cornhill, E.C.

215 1873. Seebohm, Henry, F.Z.S.; 22 Courtfield Gardens, S.W.

1889. Senhouse, Humphrey Patricius, B.A.; The Fitz, Cockermouth, Cumberland.

1871. Sharpe, Richard Bowdler, LL.D., F.L.S., F.Z.S.; Senior Assistant, Zoological Department, British Museum (Natural History), South Kensington, S.W.

1886. Shaw, William Carstairs; Bank of Madras, Madras.

1870. Shelley, Capt. G. Ernest, F.Z.S., late Grenadier Guards; 10 Thurloe Square, S.W.

220 1865. Shepherd, Rev. Charles William, M.A., F.Z.S.; Trotterscliffe Rectory, Maidstone, Kent.

1894. Shirley, Sewallis Evelyn; Ettington Park, Stratford-on-Avon.

1881. Simson, F. B., F.Z.S.; Broom Hill, Spratton, Northampton.

1882. Slater, Rev. Henry H., M.A., F.Z.S.; Thornhaugh Rectory, Wansford, Northants.

1864. Smith, Rev. Alfred Charles, M.A.; Old Park, Devizes, Wilts.

225 1881. Southwell, Thomas, F.Z.S.; 10 The Crescent, Chapel Field, Norwich.

1893. Stanley, Samuel S.; 3 Regent Grove, Leamington, Warwickshire.

1875. Stark, A. C.

1889. Stoate, William; Belmont, Burnham, Somerset.

1893. Stonham, Charles, F.R.C.S., F.Z.S.; 4 Harley Street, Cavendish Square, W.

230 1881. Studdy, Col. Robert Wright (late Manchester Regiment); Waddeton Court, Brixham, Devon.

1887. Styan, Frederick William, F.Z.S.; Ben Craig, Bayham Road, Sevenoaks, and Shanghai, China.

1887. Swinburne, John; Carlton Lodge, Catel, Guernsey.

1882. Swinhoe, Col. Charles (Indian Staff Corps), M.A., F.L.S., F.Z.S.; Avenue House, Cowley Road, Oxford.

1884. Tait, William Chaster, C.M.Z.S.; Entre Quintas 155, Oporto, Portugal.

235 *Taylor, Edward Cavendish, M.A., F.Z.S.; 74 Jermyn Street, S.W.

1873. Tegetmeier, William Bernhard, F.Z.S.; 16 Alexandra Grove, North Finchley, N.

Date of Election.

1889. Tennant, Edward Priaulx; 40 Grosvenor Square, W., and The Glen, Innerleithen, N.B.

1886. Terry, Major Horace A. (Oxfordshire Light Infantry); Burvale, Walton-on-Thames.

1891. Thornhill, William Blundell; Castle Cosey, Castle Bellingham, Ireland.

240 1893. Thorpe, Dixon L.; Loshville, Etterby Scaur, Carlisle.

1894. Ticehurst, Norman Frederic; Winstowe, St. Leonards-on-Sea.

1893. Trevor-Battye, Aubyn B. R., F.Z.S.; St. Margaret's Mansions, 51 Victoria Street, S.W.

*Tristram, Rev. Henry Baker, M.A., LL.D., F.R.S., C.M.Z.S., Canon of Durham; The College, Durham.

1864. Upcher, Henry Morris, F.Z.S.; Sheringham Hall, Norfolk, and Feltwell Hall, Brandon.

245 1894. Ussher, Richard John; Cappagh House, Cappagh, R.S.O., Lismore, Ireland.

1890. Venour, Stephen; Fern Bank, Altrincham, Cheshire.

1884. Verey, A. S.; Heronsgate, near Rickmansworth.

1881. Verner, Major William Willoughby Cole (Rifle Brigade); Junior United Service Club, S.W.

1886. Wade-Dalton, Col. H. D.; Hauxwell Hall, Finghall, R.S.O., Yorkshire.

250 1895. Wallis, Henry Marriage; 6 Southern Hill, Reading.

1881. Walsingham, Thomas, Lord, F.R.S., F.Z.S.; Merton Hall, Thetford, Norfolk.

1872. Wardlaw-Ramsay, Major R. G., F.Z.S.; Tillicoultry House, Tillicoultry, N.B.

1874. Wharton, Charles Bygrave, F.Z.S.; Hounsdown, Totton, Hants.

1891. Whitaker, Benjamin Ingham; Hesley Hall, Tickhill, Rotherham.

255 1884. Whitaker, Joseph, F.Z.S.; Rainworth Lodge, Mansfield, Notts.

1891. Whitaker, Joseph I. S.; Malfitano, Palermo, Sicily.

1887. Whitehead, Jeffery; Southwood, Bickley, Kent.

1894. Wilkinson, Johnson; Huddersfield, Yorkshire.

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260 1887. Wilson, Scott Barchard, F.Z.S.; Heatherbank, Weybridge Heath, Surrey.

1891. Withington, Frank; care of Messrs. Read and Campbell, No. 4 San Juan de Letran, Mexico City, Mexico.

Date of Election.

1875. **Wright, Charles A.**, F.L.S., F.Z.S. (Knight of the Crown of Italy); Kayhough, Kew-Gardens Road, Kew, S.W.

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265 1876. **Wyatt, Claude W.**; Adderbury, Banbury.

1895. **Yerbury**, Lt.-Col. **John William**, R.A., F.Z.S.; Army and Navy Club, S.W.

1889. **Young**, Commander **James B.**, R.N.; 2 Ventnor Villas, Hove, Brighton.

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1893. **Reichenow**, Dr. **Anton**, C.M.Z.S.; Museum für Naturkunde, Invalidenstrasse, *Berlin.*

10 1890. **Salvadori**, Count **Tommaso**, M.D., F.M.Z.S.; Royal Zoological Museum, *Turin.*

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Date of Election.

1873. Collett, Prof. Robert, F.M.Z.S.; Zoological Museum, *Christiania.*

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1875. Doria, Marchese Giacomo, F.M.Z.S., *Genoa.*

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1883. Marsh, Prof. Othniel Charles, C.M.Z.S.; Yale College, *New-haven, U.S.A.*

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1881. Meyer, Dr. Adolph Bernhard, C.M.Z.S., Director of the Royal Museum, *Dresden.*

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15 1890. Oustalet, Dr. Emile, C.M.Z.S.; Muséum d'Histoire Naturelle, Jardin des Plantes, *Paris.*

1894. Pleske, Dr. Theodor, F.M.Z.S.; Imperial Zoological Museum, *St. Petersburg.*

1872. Radde, Prof. Gustav, C.M.Z.S., *Tiflis.*

1880. Ridgway, Robert, C.M.Z.S.; Smithsonian Institution, *Washington, D.C.*

1894. Schalow, Herman; 105 Rathenowerstrasse, *Berlin, N.W.*

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THE IBIS.

SEVENTH SERIES.

No. I. JANUARY 1895.

I.—*A Contribution to the Pterylography of the* Tinamiformes. By W. P. Pycraft, M.B.O.U., Assistant to the Linacre Professor of Comparative Anatomy, Oxford.

(Plates I.–III.)

Some time since, Dr. Sclater forwarded me an adult and two nestlings of the Martineta Tinamou, *Calodromas elegans*, and, later on, an adult of the Rufous Tinamou, *Rhynchotis rufescens*, requesting at the same time that I would furnish him with a report thereon for the pages of 'The Ibis.'

The present paper may be considered as the first section of this report, and describes the pterylosis of these birds. I have assumed, as a matter of course, that my readers are acquainted with the salient features of the science of pterylography, and therefore I have not attempted to preface my descriptions with introductory remarks appertaining thereto.

My investigations have been carried out in the laboratories of the Department of Comparative Anatomy of the Museum, at such odd moments as I could manage to spare from other and more pressing work, and thus, perhaps, my apparent sloth will be considered to have been satisfactorily explained away.

For purposes of convenience it will be expedient to describe the pterylosis of the adult specimens first, commencing with—

1. CALODROMAS ELEGANS. (Plates I., II.)

Pterylæ:—

Pt. capitis (Pl. I., *Pt.cap.*).—The plumage of the head is produced forward on each side of the beak into a conical process, terminating at the posterior angle of the external nares. The two processes enclose between them a large portion of the cere[*]. The eyelids are provided with eyelashes.

The feathers of the inter-ramal space are collected into a distinct tract, with a relatively wide apterion on either side; at a point corresponding to the angle of the gape the apterion ends abruptly, the plumage blending with that of the side of the head and neck.

Pt. spinalis (Pl. II., *Pt.s.*).—Arising at the nape of the neck, it divides soon afterwards into two long narrow tracts enclosing a space[†]. Coalescing between the humeral tracts, they soon after again divide, and at the same time increase greatly in width. Just in front of the thigh a branch is sent down to the femoral tract, the main stems of the tract retaining their independence for a short distance further, and then fuse at a point roughly corresponding with a line drawn across the back from the acetabulum. The remainder of the tract is now continued backwards, finally to blend with the pteryla caudæ (Pl. II. fig. 1).

Pt. caudalis (Pl. II., *Pt.c.*).—The rectrices are but little longer or stronger than their coverts, and not easily distinguished. They are 10 in number.

Pt. colli lateralis (Pl. I., Pl. II., *Pt.col.lat.*).—The lateral cervical tract, at its upper end, fuses in the mid-ventral line with that of the opposite side, whilst the dorsal margin, for about half its length, has blended with the pt. spinalis. At the shoulder-joint it gives off a short thick branch to the pt. humeralis above, and passes below into the pt. ventralis.

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[*] See *Rhamphotheca*, p. 8.

[†] See *Apt. spinalis*, p. 5.

Pt. ventralis.—This is divided into a strong, narrow, outer, and a broad, but weaker, inner branch*, the two being separated by a narrow apterion. The outer branch passes into the pt. femoralis, sending at the same time sharply forward a narrow double row of feathers to join the hypopteron. The inner tract is probably continued down to the anus, but the bird having been eviscerated, this region was too much disturbed to afford trustworthy data.

Pt. femoralis (Pl. I., Pl. II., *Pt.f.*).—This is a very strongly developed tract of long, thick-shafted feathers. It is not continued posteriorly beyond a point corresponding to the free end of the pubis. From the anterior margin is given off a comparatively broad branch to join the pt. spinalis, from which it is otherwise separated by a broad apterion†.

Pt. cruralis (Pl. I., Pl. II., *Pt.cr.*).—This tract is confluent above with that of the pt. femoralis; the feathers composing it are of a weaker texture than those of the pt. femoralis and sparsely distributed.

Pt. humeralis (Pl. II., *Pt.h.*).—Tapers to a point posteriorly; in front is confluent with the short upper branch of the pt. colli lateralis.

Pt. alaris:—

Metacarpo-digital remiges or primaries.—These are 10 in number. The tenth is relatively long, and, like all the other primaries, is much curved and sharp-pointed. The sixth remex is the longest. All are longer than the cubitals, to be described below, giving the outstretched wing a deeply indented outline.

Cubital remiges or secondaries.—Some 20 in number.

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* The "strength" or "weakness" of a tract is a purely arbitrary distinction, depending upon the relative size and development of its component feathers.

† See *Apt. trunci lateralis*, p. 6.

The first feather is conspicuously shorter than the succeeding remiges (save the most proximal), but the difference is not so marked as in Gallinæ. Fifth cubital present.

Tectrices. Upper surface :—

T. majores.—Well developed. Those of the manus much longer and stouter than those of the cubitus.

T. mediæ.—Those of primaries 1 to 3 suppressed. The remainder, though small, yet retain their pennaceous character. On the cubitus they almost equal the *T. majores* in length and robustness.

T. minores.—About 5 to 6 cubital rows; they are absent on the manus. Overlap uncertain.

T. marginales.—There are several rows of this series on the cubitus. Along the anterior margin they bridge over the broad apterion, dividing the pt. alaris from the pt. humeralis. Overlap distal. On the manus they are confined to two rows running along the preaxial border.

Parapteron (Pl. II., *Par.*).—I cannot yet speak definitely as to this group; indeed it is difficult to say where the remiges and their coverts cease and the parapteron begins, the two groups are so gently graded one into another. If we determine the homologies of these feathers simply by their serial arrangement, then the cubital remiges and coverts might be said to be continued right up the arm to the humeral tract! Each "remex" would have a dorsal major covert, and a ventral major and median covert. There are six such groups of "remiges" and coverts, forming the parapteron.

The difficulties of this question are increased by the fact that the most proximal cubitals are, as usual, much reduced in length, the innermost and penultimate remiges being smaller than their coverts. All the feathers in the parapteron seem to have an aftershaft; in this, of course, they agree with all the remaining feathers of the wing (and trunk), save the remiges. Later on I hope to be able to speak more definitely on this interesting, though apparently unimportant point*.

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* For the literature of this group, see Nos. 1, 2, 3, 4, 5 of References.

Ventral surface:—

T. majores.—Those of the manus longer and stouter than those of the cubitus.

T. mediæ.—Present only on the cubitus. They lie almost parallel with the arm, and are concealed by the *T. minores.* They are nearly as long as the major coverts, and still retain the pennaceous character.

T. minores.—There are four imperfect rows on the cubitus, two on the manus. The first row is situated at the base of the median coverts of the cubitus and the major coverts of the manus. The second row is situated close behind the first, and ceases proximally in the region of the thirteenth cubital remex. The third commences at a point corresponding to the level of the third cubital remex. Distally the row is continued on to the manus. The fourth row is divided from the preceding by a broad bare space; the feathers are wide apart, and scarcely succeed in concealing the skin. This row terminates at a point corresponding to the insertion of the ninth cubital remex.

T. marginales.—On the cubitus the first row of these coverts forms one side of a triangle, enclosing a bare space; the opposite side of the triangle is formed by the fourth row of minor coverts, and the base (imperfectly) by the axillary feathers (Hypopteron); the feathers along the preaxial side of the triangle are very long and conceal the otherwise naked surface of the patagium.

There are five rows of marginal coverts on the cubitus, but only two on the manus, these running along the preaxial border.

Hypopteron (Pl. I., *Hp.*).—A single row of five feathers, connected with the outer branch of the pt. ventralis by a double row of irregularly arranged feathers (see p. 3).

Carpal covert and remex (5) both present; the former much the smaller; both are closely approximated one to the other and to the first metacarpal remex.

The wing is quinto-cubital (2, 6, 8).

Apteria of trunk:—

Apt. spinalis (Pl. I., *Apt.sp.*).—This arises at the upper end of the neck, over the region of the 2nd and 3rd vertebræ, and is continued downwards to a point corresponding with a line drawn across the back from the acetabulum. It is very narrow, and is interrupted between the shoulders by the fusion of the two branches of the pt. spinalis.

Apt. colli lateralis (Pl. I., *Apt.c.lat.*).—Arising rather below the middle of the neck, it almost immediately passes into the space dividing the humeral from the spinal tract (= the dorsal moiety of the apt. trunci lateralis, see below).

Apt. mesogastræi (Pl. I., *Apt.m.*).—Arising from the middle of the neck, it extends in the median line uninterruptedly (?) to the pt. caudæ*.

Apt. trunci lateralis (Pl. I., Pl. II., *Apt.t.lat.*).—A large space embracing the whole side of the trunk, but divided, more or less completely, into two portions. The first of these two segments may be said to arise at the summit of the shoulder, and extends backwards to the anterior margin of the femoral tract; here it turns sharply forward, and serves to divide the humeral from the spinal tracts; it finally terminates in the apt. colli lateralis. The second moiety arises between the two branches of the pt. ventralis; running backwards between the leg and trunk, it sweeps round the femoral tract and serves to divide it from the pt. spinalis. The first of these two spaces, as will be noticed (Pl. II.), is more or less completely subdivided by a double row of feathers from the outer branch of the pt. ventralis to the hypopteron†.

Apteria of wing:—

Apt. alæ superioris.—Divides the wing-feathers from those of the trunk, but a narrow band of feathers from the t. marginales, along the anterior margin of the patagium, connects the wing-tract with the humeral tract in front, whilst the hypopteron performs a similar office at the margin of the posterior wing-membrane.

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* Owing to dissection, this region is much disturbed.

† Owing to the fact that the figure is a trifle out of drawing in the region below the wing, the extent of this great space is somewhat obscured in Plate I.

Apt. alæ inferioris (Pl. I., *Apt.a.inf.*).—May be said to embrace nearly the whole of the under-wing surface. In life it is more or less effectually concealed by the posterior row of elongated marginal coverts and the two or three, more or less imperfect and widely separated, rows of t. minores. This space is also somewhat interrupted by the hypopteron (Pl. I., *Hp.*), which joins the double row of feathers previously described (p. 3) as given off by the pt. ventralis (outer branch).

Uropygium (Pl. I., Pl. II., *U.*).—Only the elliptical tip of the oil-gland projects beyond the general contour of the body; this is surmounted by four long, but closely approximated, oil-agglutinated tufts of feathers.

Filoplumes.—A few long ones occur round the base of the remiges.

Pulviplumes or powder-down-feathers entirely absent (see p. 17).

Plumulæ or Down-feathers:—

Distribution.—Down-feathers are entirely absent on the trunk, but occur on the wing-tract; here, however, they are strictly confined to the base of the major coverts and remiges. There is a down-feather at the base of each major covert throughout the series, two on the dorsum of every cubital remex, and one in a like position on every primary remex.

Structure.—The down-feathers possess a long calamus or quill, which breaks up, in the region of the upper umbilicus, into a large number of very long rami. There is no rhachis. The rami bear numerous and moderately long tapering radii, apparently made up of a number of short segments, joined end to end; these segments, proximally, are exceedingly compressed from side to side, so as to be blade-like or strap-shaped; distally they decrease in width, terminating in a long, fine, free filament. The distal end of every segment appears to be slightly thickened, as if to receive the base of the segment next beyond it, and, further, to have the dorsal and ventral margins produced forwards into two short blunt processes, representing cilia of more highly developed feathers (Pl. III. fig. 2).

Semiplumæ.—These occur very sparingly. I find some three to four fringing the upper margin of the pt. femoralis, and a similar number along the margin of the pt. spinalis opposite, where they occupy much the same position as do the powder-down-feathers of Nitzsch (see p. 17). The structure of the radii agrees precisely with that of the down-feathers.

Thick-shafted Feathers.—The rhachis of some of the contour-feathers, notably those of the pt. spinalis, is much thickened (Pl. I., Pl. II.).

Accessory and ornamental Plumes.—There is a tuft of elongated feathers arising from the crown of the head.

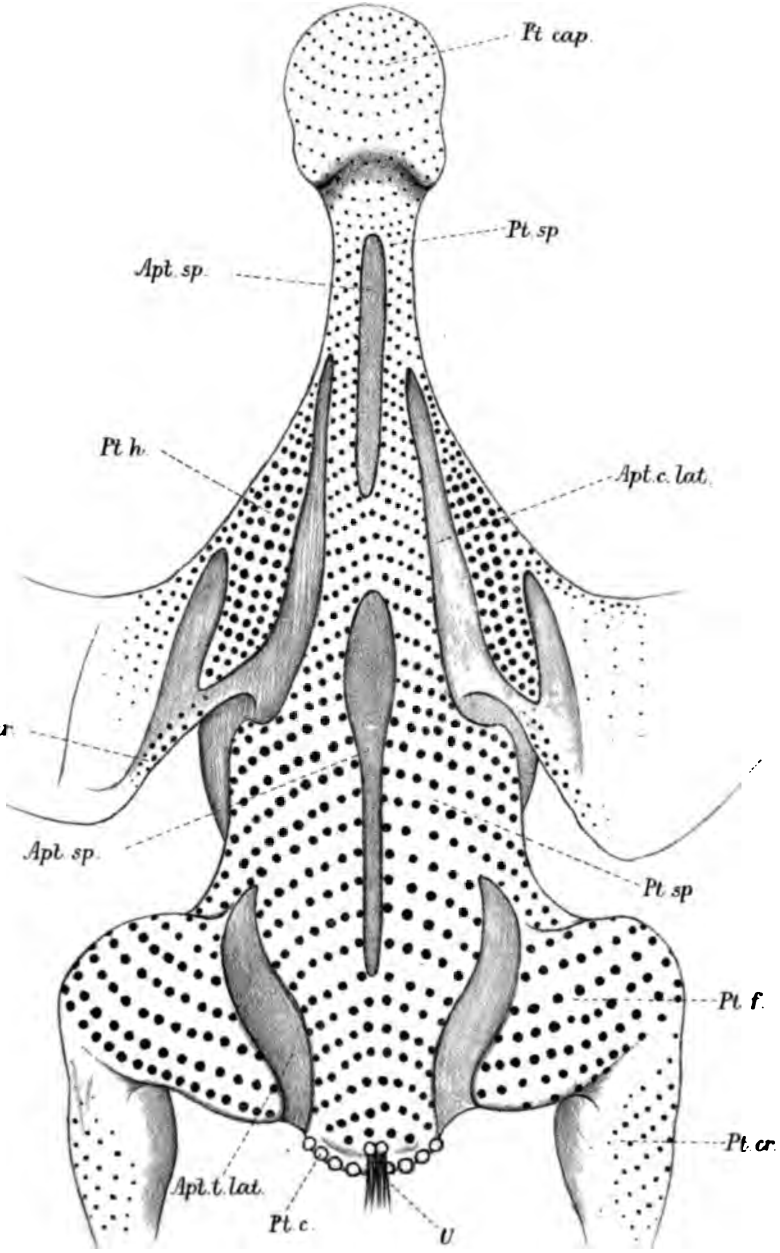
Rhamphotheca.—The compound structure of the Rhamphotheca, or horny beak-sheath, is not apparent in the adult. In the mandible it is suggested by two grooves, one on either side from the gonys, or symphysis of the rami, to the tip. At the base of the upper beak-sheath there is a well-developed cere. Arising from the anterior angle of the external nares, it extends backwards as far as the forehead, so as to be almost level with a line drawn across the head from the anterior corner of the eyelid.

There is no trace of denticulation along the tomia, or of the glandulæ gulares, or of the maxillo-palatine glands described in the nestling (p. 13).

Podotheca.—Acrotarsus reticulate proximally, but rapidly passes into scutellæ, which are continued down to the planta.

Planta.—Reticulate, the scales decreasing somewhat in size from above downwards

Claws.—Short, blunt, and stout, that of the middle toe having the peculiar flange to the inner margin which is so often pectinated in other birds, *e.g.* the Nightjar, Bittern. There is a short conical claw on the index digit of the manus.



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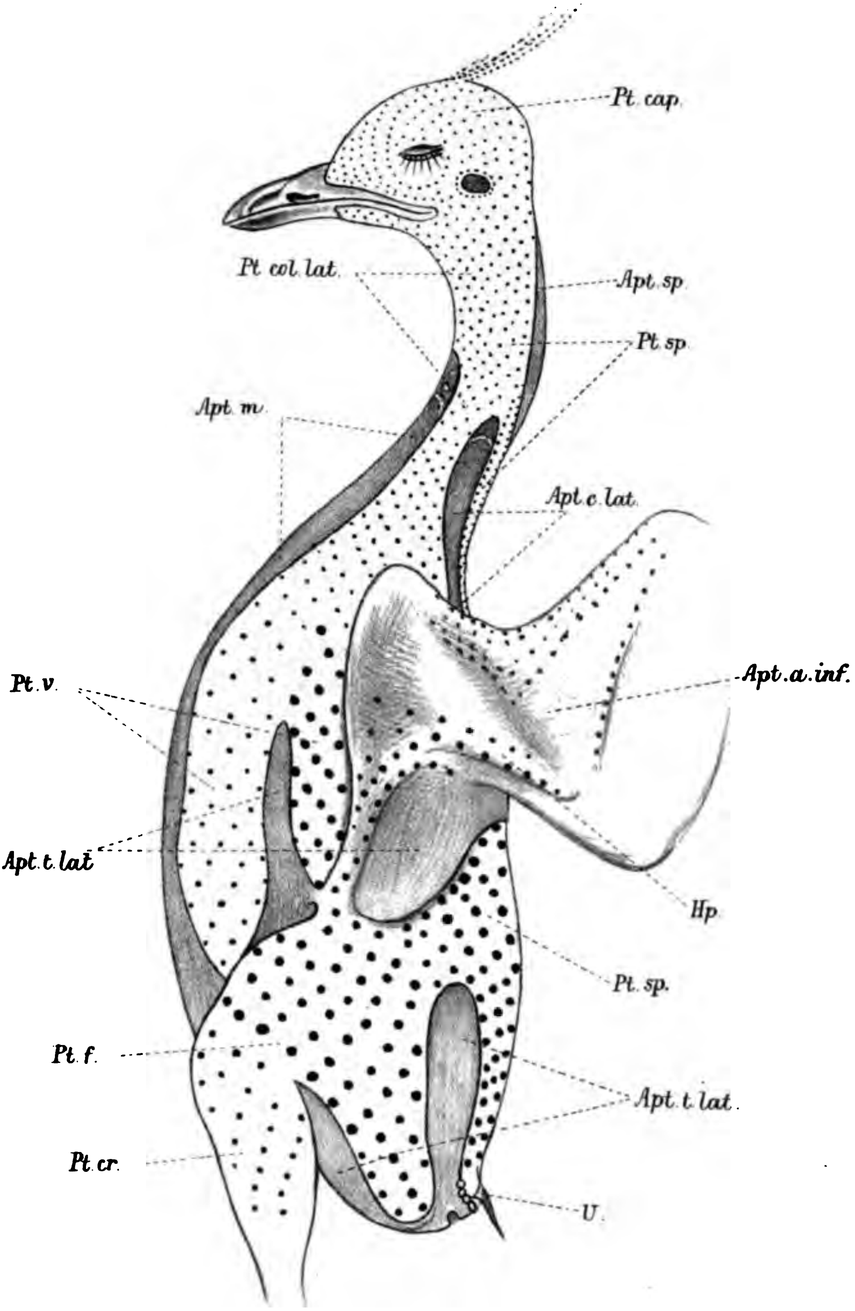
PTERYLOSIS OF CALODROMAS ELEGANS.



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PTERYLOSIS OF CALODROMAS ELEGANS.

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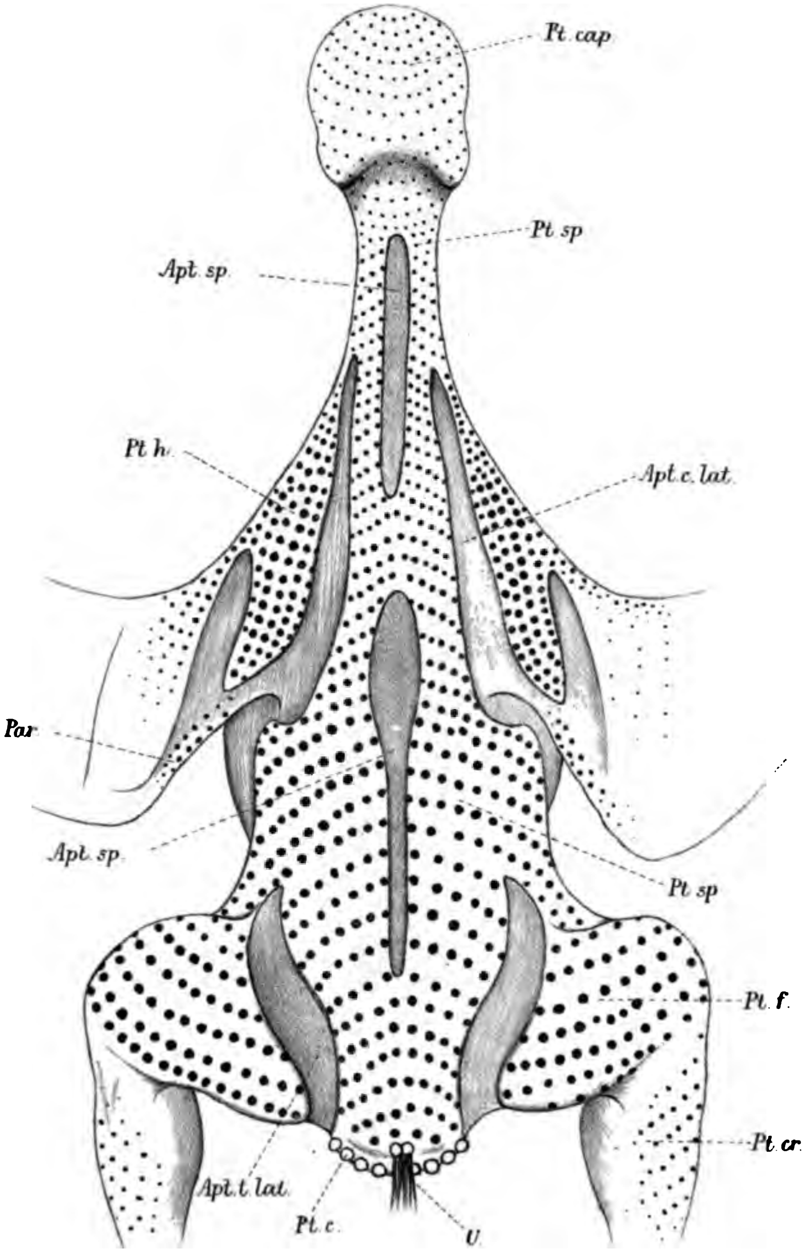

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PTERYLOSIS OF CALODROMAS ELEGANS.

2. RHYNCHOTUS RUFESCENS.

An adult moulting specimen of this Tinamou differs in pterylosis from *Calodromas elegans* in the following points:—

Pt. spinalis.—The cervical portion is not branched, but runs in the form of a narrow band down the middle line of the neck. There is a narrow apterion running along the centre of the dorsal moiety of the tract, from between the shoulders to a point corresponding to the anterior end of the ilium, *i. e.* to about the middle of the back.

Pt. caudæ.—The rectrices are hardly, if at all, differentiated from the coverts.

Pt. ventralis.—Of the pectoral portion the outer branch is narrower and the inner somewhat feebly developed.

Pt. humeralis.—Runs forward and downward to join pt. ventralis, instead of this tract (ventralis) giving off a branch to it.

Pt. alaris.—The carpal remex (see p. 5) only is present, and reduced in size, though still pennaceous.

The *Hyporhachis* (aftershaft) of the tectrices majores, mediæ, and minores of the ventral surface rudimentary, instead of well developed, as in *Calodromas elegans.* The aftershaft of the remainder of the plumage is large.

Apteria:—

Apt. colli lateralis.—Extends far up the neck and is very wide.

Apt. spinalis.—A narrow space extending from between the shoulders to the middle of the back.

Filoplumes.—A few small ones round the base of the remiges.

Eyelashes.—Stronger.

Rhamphotheca.—Fused; no groove on the mandible.

Powder-down.—Absent.

Plumulæ (down-feathers).—Absent, even on the major coverts and remiges (see p. 7).

Claws.—Absent on the wing.

The Pterylography of the Nestlings of Calodromas elegans *and* Nothura maculosa.

Dr. Sclater has kindly sent me two young birds of the former and one of the latter species. Of these the first two (*C. elegans*) were preserved in spirit, one was "just hatched," and the other was a bird ready to emerge from the shell. The specimen of *Nothura* was "hatched in the incubator," and is a "skin."

Distribution of the Nestling-down-feathers or Neossoptiles.—In examining the pterylosis of nestling birds, it must be remembered that the down-feathers occupy the exact position of the future definitive feathers (true down does not appear till after these feathers are assumed), so that we should expect to find little or no difference between the pterylosis of the adult and nestling. In the present case these conditions obtain.

Pterylosis of the Trunk.—As has just been implied, the pterylosis of this region does not differ from that of the adult, at least so far as I can make out. I ought here to state that the examination of the nestlings was, of necessity, less thorough than that of the adult, inasmuch as in the latter all the feathers were clipped close to the body, a proceeding I felt I ought not to adopt with the young birds. I therefore contented myself with carefully moving aside the plumage while the specimen was fastened down in spirit. There could be no doubt whatever as to the main features, *e.g.* the spinal, cervical, femoral apteria.

Pterylosis of the Wing.—As with the trunk, so with the wing; one or two points, however, deserve notice.

Remiges.—The metacarpo-digital remiges (=primaries) are not so far developed as in a ripe embryo of the common fowl, in that, in the fowl, remiges 1 to 7 (and cubitals of the same number) have pushed their way some distance beyond the post-axial border of the wing. In the present case only the extreme tips of the primaries 4 to 8 have as yet appeared.

The cubital remiges are still less developed, since there is yet no sign of the definitive feathers. The down-feathers, both of the metacarpo-digital and cubital remiges, are of considerable length.

Tectrices.—Obviously nothing very definite can be said about these feathers at this stage. On the dorsal surface the "downy" major coverts of the cubitus are longer than the remiges, if we may so speak of them. This is interesting, as these portions obtain in the development of these feathers in other birds not at all allied. The length of the "down"-feathers agrees approximately with that of the definite feather which supplants it.

The Structure of the Nestling-down.—The structure of the nestling-down is of peculiar interest on account of its unusual complexity. In both *Calodromas elegans* and *Nothura maculosa* the nestling-down is found to be not of the usual "downy" character, but composed of semiplumes.

Briefly, a semiplume differs from a down-feather in that in the former the rhachis is long and stiff, supporting several pairs of similarly stiff radius-bearing rami, whilst in the latter the rhachis, if present, is never stiff, and the rami and radii are long and very delicate, hence the loose flowing structure. A Marabou-plume and a piece of Swan's-down well illustrate the two types.

Probably the first point which would be noticed in an examination of an individual feather would be the enormous aftershaft (Pl. III. fig. 1, *H.*), which almost equals the main feather in size, the difference in length being very slight. The main feather is composed of a strong shaft, bearing four to six pairs of rami, which decrease in length from below upwards, the free ends giving a gently rounded outline. The rami all bear radii, which are longest on the proximal rami. The rami are produced beyond the most distal radii into long filaments*. By the unaided eye the feathers of the dorsal surface can be sharply differentiated into a distal pennaceous and a proximal downy half; this, of course, is due to the structure of the radii. The calamus is entirely embedded in the skin.

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* In the nestling Ostrich apparently these filaments become much thickened and flattened out, giving the bird the appearance of having been decorated with thin curly horn-shavings.

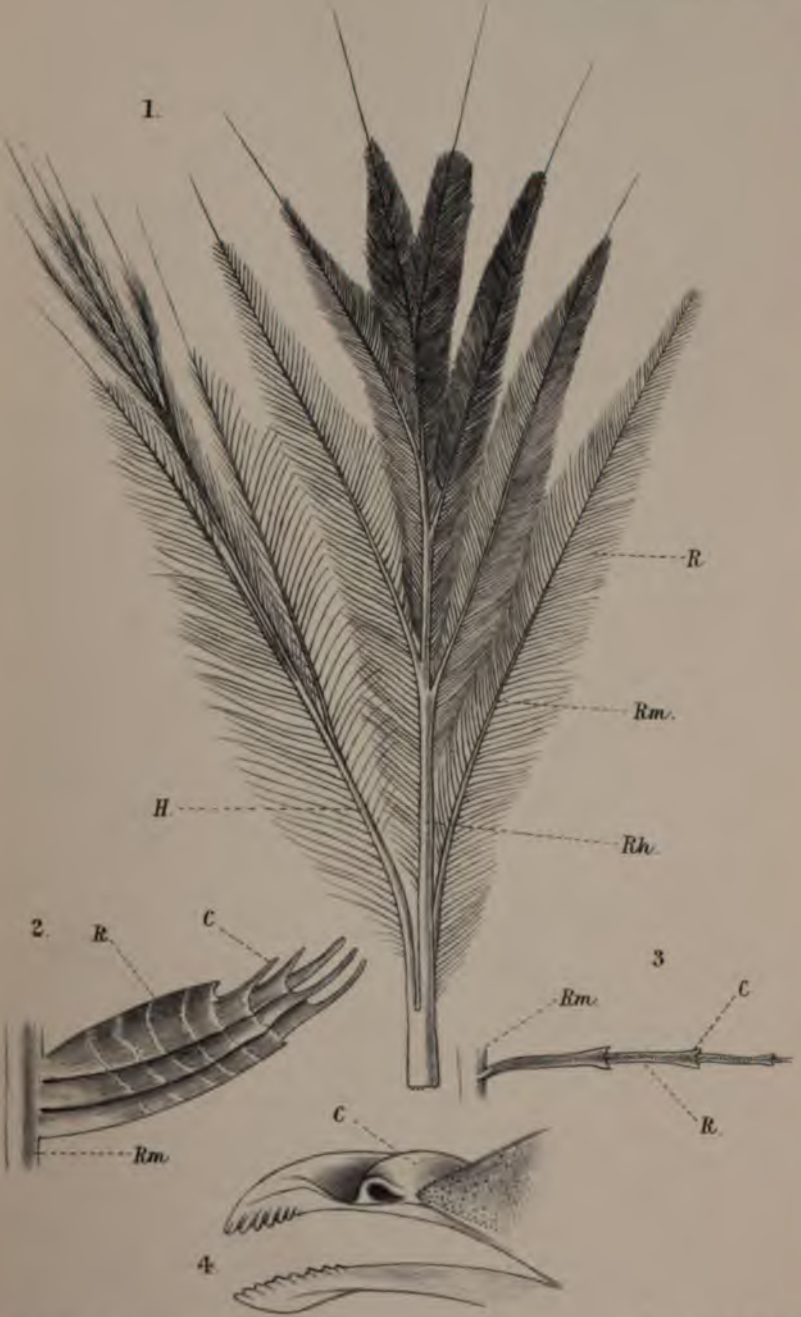
Under a high power of the microscope the radii are seen to be given off in pairs along the rami. Those of the proximal end of the feather are deeply pigmented, the colouring-matter, of the tint of sepia, being dispersed in granules of unequal size and distribution, and imparting a somewhat striated appearance to the radius. Structurally they cannot be said to differ from the downy radii of the definitive feather (Pl. III. fig. 3, p. 7).

The radii of the distal end of the feather are in no wise to be distinguished from those of such pennaceous feathers as do not interlock (Pl. III. fig. 2), yet, by reason of their stiffness and close arrangement, form a vexillum. They are deeply pigmented; the colouring-matter, of the tint of vandyke-brown, is broken up into oblong masses separated from each other by narrow transparent zones (Pl. III. fig. 2). Towards the tip these radii bear tolerably long cilia. At the proximal end of the rami the radii cross each other, after the fashion of the typical interlocking feather.

The aftershaft, as previously stated, is almost as long as the main stem, and structurally differs only in that the distal rami are pointed so much forward that they run almost directly parallel with the shaft, and this has resulted in a feeble development of the radii, which have been crowded almost out of existence (Pl. III. fig. 1, *H.*).

The presence of an aftershaft, and so greatly developed, is a feature of considerable interest, inasmuch as it had previously been known to occur only in *Dromæus*. Thus, Dr. Gadow says of it (14):—" In *Dromæus* each neossoptile . . . . has a short calamus carrying a long dorsal rhachis and a much smaller ventral aftershaft—each of them furnished with from 5 to 6 rami . . . . and these again beset with numerous radii without cilia. This is the only known instance of a neossoptile with an appendage, and it is significant that the latter is smaller than the principal shaft, and only in its final stage equals the rhachis in size." Quite recently, however, I have found a fairly well-developed after-

Ibis. 1895. Pl. III.



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PTERYLOSIS OF CALODROMAS ELEGANS.

shaft in the nestling-down-feathers of the domestic Turkey and a small one in those of the Common Fowl. These I shall describe hereafter, together with a few other facts of kindred interest.

Uropygial Gland.—The tuft on the gland is barely perceptible.

Rhamphotheca.—The tomia (cutting-edges) of the tip of the beak-sheath of both upper and lower jaws are minutely denticulated (Pl. III. fig. 4), presenting the appearance to the unaided eye (at least in the upper jaw) of a number of tiny, white, closely-crowded teeth. The denticulation of the mandible is slighter and extends further back.

The *rhamphotheca* appears to be compound, that of the upper jaw consisting of a median and two lateral pieces, which fuse distally. The sheath of the lower jaw is similarly divided into a ventral median plate and two lateral plates. The median plate extends from the gonys to the tip of the jaw, where it fuses with the two lateral pieces. Along the distal end of the inner surface of the mandible, in the median line, run two closely approximated ridges, bearing in single file a number of small papillæ—the glandulæ gulares (?). Along the upper jaw in the corresponding region run three such ridges side by side, the central one extending back to the choanæ. These are also provided with papillæ*.

The specimen "taken from the egg" differed from the older bird only in that the oil-gland was less developed and bore no trace of a tuft. The cere also was more tumid. There was an egg-tooth ("Ei-zahn") on the tip of the upper jaw.

The Nestling of Nothura maculosa.

The Nestling-down.—So far as I can make out at present, the "down" of this species differs from that of *Calodromas elegans* only in that the radii of the distal end of the feather were slightly less vigorously developed.

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* Whether the rhamphotheca is actually compound, and what is the exact nature of the denticulations and papillæ, are questions I have reserved for further investigation. I have the less hesitation in postponing these matters since they are outside the province of pterylography.

The Rhamphotheca was not denticulated. As to the pterylography of this specimen I can say nothing, since, as I have before stated, I have only its skin, and skins do not afford trustworthy data.

It is not advisable here to make any comparison of the two genera just described with the remainder of the order, or even with allied forms, since I think it is obvious that we are not yet in possession of sufficient facts to make such a comparison profitable. If care be taken to correct the errors pointed out in Dr. Gadow's last book, the tables he there gives will be found to contain all that we know at present.

The literature of this subject seems to be of the scantiest character; only three authors can be quoted as containing original statements; all other writers apparently borrow from these or from each other without, in some cases, troubling to acknowledge the source of their information.

A considerable portion of the statements of these authors will now have to be much modified, even in some cases expunged altogether. For brevity's sake I shall quote only such portions of their descriptions as conflict with the fresh facts brought to light in the present paper.

The earliest writer is Nitzsch (1). He described and figured the pterylography of *Crypturus tataupa*, and apparently supplemented his observations by an examination of *C. tao*, *C. variegatus*, and *Rhynchotus rufescens*. He says:—"This genus (*Crypturus*) has two remarkable peculiarities. One of these occurs in the dorsal tract, and consists in the presence of powder-down-feathers, which enclose the dilatation of the hinder part and separate it both from the spaces and from the lumbar tracts (=pt. femoralis). These powder-down-feathers form no true tracts, but are intruded into the gaps of the contour-feathers, so that in *Crypturus* we find true down in these places among the contour-feathers, a peculiarity which occurs in no other Gallinaceous bird." . . . . . "The second peculiarity consists in the structure of the inferior tract (=pt. ventralis), which is divided very high up, almost at the throat . . . . the outer branch

. . . . is continued beyond the pectoral boundary, passes through the lateral space of the trunk, and unites with the anterior extremity of the lumbar tract of the same side. Nowhere else have I observed a similar union of the two tracts." Besides these observations he remarked that the tail-feathers are wanting in *C. tataupa* and *Rhynchotus rufescens*, and that he had "never observed any great thickening of the lower half of the shaft of its contour-feathers," though a few pages previously he included these birds in a list of some five others (Gallinaceous birds, with which he placed the Tinamous) which have certain of their feathers "characterized . . . . by the enormous width of that portion of the shaft of the contour-feather on which the downy barbs are seated."

Stejneger (12) says:—"The tail-feathers concealed under the coverts or altogether absent . . . . Powder-downs are present among the feathers, and in some the feathers have aftershafts."

Gadow appears to have derived the main part of his information from Nitzsch, but has a few remarks relative to the nestling that I take to be original.

In the Anatomischer Theil of his most valuable work (5) he says:—"Tinamidæ, Puderdunen mit den Conturfedern des grossen Sattels der Rückenflur gemischt"; and again, "Wahre Dunen, die theilweise zu Puderdunen umgewandelt sind, finden sich zwischen den Conturfedern des Unterrückens. Dorsalflur . . . . keinen Rain enthält."

In his recently-published second volume (6) (Systematischer Theil) the pterylography assumes rather an important place, and such parts as must be discussed here may be collated as follows:—"Vorhandensein von allerdings nur spärlichen Dunen bei den Erwachsenen; einige sind in Puderdunen umgewandelt."

"Alte Dunen nur zwischen den Conturfedern, einige Dunen zu Puderdunen umgewandelt." "Ohne Spinalrain." These statements agree with those of Nitzsch.

The nestling-down is briefly described thus:—"Sehr einfach gebaute, dicht stehende Neossoptile." In the earlier part of the book the distribution of the down is referred to as "überall."

This then, so far as I can make out, represents all that has been written, all other references having been almost certainly derived from one of these three sources. Let us now briefly analyze these statements.

Nitzsch, as all admit, was a most careful observer, but he does not appear to have noticed the apterium in the spinal tract of *Rhynchotus rufescens*, and this fact allows us room for doubt whether or not it is present in the genus *Crypturus*. The tail-feathers in my specimen of *Rhynchotus rufescens*, as will be shown directly, were present, though, it will be remembered, they were stated to be absent by Nitzsch. In two places reference is made to thick-shafted feathers, the one contradicting the other; so far as my experience goes, this feature of the feathers, notably on the spinal and femoral tracts, is very marked.

Like Nitzsch, it will be noticed, Stejneger states that the tail-feathers in this group are sometimes absent. That they may be but slightly developed is, as we have seen (pp. 2, 9), sometimes the case, but that they are ever entirely wanting is doubtful. Nitzsch, it will be remembered, definitely stated that they were absent in *Crypturus tataupa* and *Rhynchotus rufescens*. In my example of *Rhynchotus* they are in process of moulting, but a few unmoulted feathers remain.

I have not had an opportunity of going carefully into the presence or absence of the aftershaft, but in the few species I have examined I find it developed in various degrees. In *Calodromas elegans*, *Nothura boraquira*, and *Rhynchotus rufescens* it is more than half as long as the main stem; in *Nothocercus julius* it is evidently degenerating, inasmuch as the shaft is almost, if not quite, obsolete, only the rami remaining. In *Tinamus major* I found it reduced to a small shaft bearing a few rami in the case of one single feather; I pulled some three or four more, and there was not the smallest trace of it.

No one appreciates more, or has profited more by, the invaluable work of Dr. Gadow (5, 6) than I; it is, therefore, in no spirit of captious criticism that I here point out that he has fallen into an error in so unreservedly accepting Nitzsch's work. The error lies in this, that what Nitzsch found in the Crypturi Dr. Gadow has applied to the whole of the Tinamiformes, and, as the present paper abundantly proves, such application is incorrect.

The distribution of the down is a point which has probably hitherto been wrongly interpreted. Of the two birds which form the subject of this paper, down-feathers were only present in one—*Calodromas elegans*—and in this bird in a place not previously recorded, viz. on the base of the remiges and major coverts, and nowhere else on the body. The powder-down-feathers of Nitzsch and Gadow will probably prove to be degenerated semiplumes; at any rate, such is the case of the two birds now under discussion. These semiplumes are confined almost entirely to the inner margin of the femoral tract and that portion of the pt. spinalis opposite it, and appear to be nothing more than degenerated contour-feathers of the row to which they belong; there was but one semiplume to each row.

Powder-down-feathers are undoubtedly present in some genera, *e. g.* I have found them in a stuffed specimen of *Tinamus major*. I believe these will prove to be homologous with the semiplumes just described. Are powder-down-feathers the result of the degeneration of semiplumes or of down-feathers?

As touching the simple construction and universal distribution of the nestling-down, it has already been shown that this is not actually the case.

I have endeavoured to restrict the limits of the present paper as much as is compatible with clearness; later I hope to be able to say something further as to the structures of the rhamphotheca and the associated papillæ. The muscular system is just now engaging my attention, and, should anything of interest come to light, I shall not fail to communicate it to the readers of 'The Ibis.'

The net results of this contribution, in so far as taxonomic questions are concerned, will be found briefly summarized in the appended table.

Tabular Statement contrasting the Results of the present Paper with those of other Writers.

	Nitzsch: describing the genus *Crypturus*.	Stejneger: describing the Order *Crypturi* (= *Tinamiformes*).	Gadow: describing the Order *Tinamiformes*.	Present paper: describing the genera *Calodromas* and *Rhynchotus*.
Pteryla spinalis …………………	solid.	…………	solid.	with apteria.
„ ventralis …………………	divided high up.	…………	…………	in *C. elegans* divided low down.
„ caudæ (tail-feathers) …	absent in *Crypturus* (*Rhynchotus*) *rufescens*.	sometimes absent.	very weak.	very weak.
Hyporhachis (aftershaft) ……	absent in *C. tao*.	present in some.	absent or rudimentary.	large.
Pulviplumes (powder-down) …	present in *Crypturus* (*Rhynchotus*) *rufescens*.	present.	present.	absent.
Plumulæ (down-feathers) ……	"singly here and there upon the spaces," *e. g.* lateral spaces of trunk and over the furcula.	…………	present between contour-feathers.	present only in *C. elegans*, on the base of the remiges and major coverts.
Semiplumæ ……………………	"down-feathers become converted into semiplumes as they approach the contour-feather tracts."	…………	…………	rare, a few along the spinal and femoral tracts appear to equal the powder-down-feathers of Nitzsch and Gadow.
Neossoptile (nestling-down) …	…………	…………	simple.	complex.
„ „ …	…………	…………	uniformly distributed.	distributed as in adult.

I wish, in conclusion, to record here my grateful thanks to Dr. P. L. Sclater, who has kindly entrusted me with the material for the present investigation.

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EXPLANATION OF THE PLATES.

Plate I.

Left side view of *Calodromas elegans*, showing the distribution of the pterylæ (feather-tracts). The shaded parts represent the apteria. Large dots indicate the presence of thick-shafted feathers (p. 8).

Apt.a.inf.	Apterium alæ inferioris.
Apt.c.lat.	„ colli lateralis.
Apt.t.lat.	„ trunci lateralis.
Apt.m.	„ mesogastræi.
Apt.sp.	„ spinalis.
Pt.cap.	Pteryla capitis.
Pt.col.lat.	„ colli lateralis.
Pt.cr.	„ cruralis.
Pt.f.	„ femoralis.
Pt.sp.	„ spinalis
Pt.v.	„ ventralis.
Hp.	Hypopteron.
U.	Uropygium (oil-gland).

Plate II.

Dorsal aspect of *Calodromas elegans*, showing the arrangement of the feather-tracts (pterylæ). The shaded parts represent the apteria.

Additional Letters.

Pt.c.	Pteryla caudalis.
Pt.h.	„ humeralis.
Par.	Parapteron.

Plate III.

Fig. 1. A "nestling-down" feather (neossoptile) from the spinal tract of a recently-hatched example of *Calodromas elegans*; magnified and slightly diagrammatic, showing the highly developed radii at the distal end of the feather and the large aftershaft (Hyporhachis), *H.*

Fig. 2. Three radii from the distal end of the feather shown in fig. 1 highly magnified. These radii are apparently composed of a number of segments, such as is shown in fig. 3, which have become fused. The "cilia," it will be noticed, occur only on the penultimate and two preceding segments as a prolongation of the ventral angle of the laminated segment.

Fig. 3. A portion of a radius from the proximal end of fig. 1, highly magnified.

Fig. 4. Beak of a recently-hatched example of *Calodromas elegans*, magnified, showing the denticulations along the cutting-edges of the distal end. Those of the mandible are slightly exaggerated.

References:—*C.* Cere, Cilia; *H.* Hyporhachis; *R.* Radius; *Rm.* Ramus; *Rh.* Rhachis.

II.—*A List of the Birds of the Island of Balábac, with some Notes on and Additions to the Avifauna of Paláwan.* By A. H. Everett, C.M.Z.S., M.B.O.U.

I. Birds of Balâbac Island.

Balâbac Island is separated from Balambangan, Banguey, and the other islands which cluster around the N.E. extremity of Borneo by the South Balâbac Strait, which leads from the China Sea into the Sulu or Mindoro Sea. This strait is about 26 miles wide to the northward of Balambangan Island, and somewhat wider between Banguey Island and Balâbac, the highest peaks of which two last-named islands lie N. ½ E. and S. ½ W. from each other, 37½ miles apart, so that the islands are plainly visible each from the other. The water in the South Balâbac Strait is for the most part less than 50 fathoms deep, but there is a narrow channel through it in which the soundings vary between 50 and 100 fathoms, though nowhere maintaining the latter depth continuously between the China and Sulu Seas.

The west coast cannot be approached closely on account of numerous coral reefs and shoals, which extend several miles to seaward, but the east coast is bold, with deep water close inshore. The island is nearly 20 miles long in a due N. and S. direction, and 9 miles broad; and it is generally hilly, the more elevated trends varying from 800 to 1300 feet, whilst Balâbac Peak attains a height of 1890 feet, and forms the culminating point on the island. With the exception of some insignificant clearings, the entire island is densely wooded. The rainfall is very heavy, the driest months being February and March, as on the neighbouring part of the N.W. coast of Borneo.

Immediately to the north of Balâbac is the North Balâbac Strait, separating the island from the S.W. extremity of Palâwan. This strait differs from the southern passage in its comparatively smaller breadth; in the fact that the depth of the sea throughout it is under 50 fathoms; and in its being studded by numerous islets, of which the principal ones are Bancálan, Mantangule, Canabungan, Candarâman, Pandannan, and Bugsuk. As all these islets are of recent coral formation and flat, while the S.W. end of Palâwan is low and shelving, the strait must have been, at no very distant date, of considerably greater width and clear of islets, and the geographical connection of Balâbac with Palâwan would not have been so close as it is now *.

The zoology of Balâbac remained wholly unknown until Dr. J. B. Steere visited it in 1874, when he stayed a month on the island and made a small collection of mammals and birds, obtaining or recording altogether twelve species of the latter. Subsequently, in his 'List of the Birds and Mammals of the Steere Expedition' (published at Ann Arbor in 1890), Dr. Steere added eight more species, thus bringing the total number of birds recorded from Balâbac up to twenty species. Scanty as this record was, the presence of such species as *Cittocincla nigra*, *Criniger frater*, *Parus amabilis*, *Æthopyga shelleyi*, and *Dryococcyx harringtoni* caused it to be a foregone conclusion that the avifauna would prove to be identical, or nearly so, with that of Palâwan; and the acquisition of further material by the present writer, raising the number of known species to a total of sixty-eight, has failed to produce a single form that has not already been found or does not almost certainly exist in Palâwan. The only salient difference between the two islands so far appears to be in the absence of *Polyplectron nehrkornæ* from Balâbac, and perhaps there are other deficiencies, which may serve to indicate a certain degree of individuality in its ornis.

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* This account of Balâbac is partly compiled from the China Sea Directory. A map of the Balâbac-Palâwan Group will be found in Proc. Zool. Soc. 1889, p. 220.

In the following list those species which were first recorded by Dr. Steere are distinguished by an asterisk.

1. PHYLLOSCOPUS BOREALIS (Blas.).

*2. MONTICOLA SOLITARIUS (P. L. S. Müll.).

*3. CITTOCINCLA NIGRA, Sharpe.

An immature female shot in Balâbac has the sides and flanks strongly washed with ferruginous, the black plumage of the lower breast being very faintly washed with the same hue. The thigh-plumes are warm sepia-brown. A Palâwan male, nearly adult and having the rectrices much worn, has the secondaries broadly margined on the external webs with ferruginous red, so that the wing, when closed, exhibits a conspicuous rusty-red band. Some of the upper wing-coverts and the shoulder-plumes are similarly margined or spotted; and on each side of the head, just above and below the distal extremity of the ear-coverts, there are small defined patches of the same reddish colour.

4. ORTHOTOMUS RUFICEPS (Less.).

5. MOTACILLA FLAVA, L.

6. MOTACILLA MELANOPE, Pall.

7. MOTACILLA OCULARIS, Swinhoe.

8. LIMONIDROMUS INDICUS (Gm.).

A single specimen, shot in the forest on the hills overlooking the Spanish settlement.

9. ANTHUS RICHARDI, Vieill.

One specimen only obtained; a male, shot Dec. 26, 1893.

10. MIXORNIS WOODI, Sharpe.

11. TURDINUS RUFIFRONS (Tweedd.).

12. PTILOCICHLA FALCATA, Sharpe.

I include this species with some doubt on the authority of my native hunter, who, however, was familiar with the bird, he having obtained it previously in Palâwan.

13. ANUROPSIS CINEREICEPS (Tweedd.).

*14. **Criniger frater**, Sharpe.

15. **Chloropsis palawanensis**, Sharpe.

The moustache is wholly violet-blue in the hen-bird, and in the male the terminal portion is white, more or less washed with violet-blue of a less vivid hue than in the female.

*16. **Oriolus palawanensis** (Tweedd.).

*17. **Parus amabilis**, Sharpe.

*18. **Dendrophila frontalis** (Swains.).

Sitta frontalis (Swains.); Gadow, Cat. Birds B. M. iii. p. 358.

A specimen shot in Balábac had the leg coloured dull brownish red instead of brown as in Palâwan specimens. The British Museum Catalogue, quoting Jerdon, gives the soft parts as follows:—"Bill bright cobalt-blue; legs sienna-yellow; orbital skin lemon-yellow; iris light straw-colour." Oates notes the bill as "coral-red" in Burmese specimens, and it is the same here in the Balábac-Palâwan birds. In the Balábac bird the bill is tipped with brown, and the orbital skin is yellowish grey.

19. **Lanius lucionensis**, L.

20. **Chibia palawanensis** (Tweedd.).

21. **Buchanga palawanensis**, Whitehead.

Buchanga cineracea (Horsf.); Sharpe, Tr. Linn. Soc., ser. 2, Zool. i. p. 324.

Buchanga leucophæa (Vieill.); Tweeddale, P. Z. S. 1878, p. 615.

Buchanga palawanensis, Whitehead, Ibis, 1890, p. 47.

Mr. Whitehead has noted the iris of this species as dark grey. Both in Palâwan and Balábac adult male specimens the iris is pure crimson-lake. Young birds have the iris dark grey, and it passes through brown, orange-brown, and brick-red until it attains the full depth of colour seen in the adult birds.

22. **Artamides sumatrensis** (S. Müll.).

23. **Cyanoptila cyanomelæna** (Temm.).

24. Hypothymis occipitalis (Vig.).

25. Siphia lemprieri, Sharpe.

Cyornis banyumas (Horsf.); Tweeddale, P. Z. S. 1878, p. 615 (*partim*); Wardlaw-Ramsay, Ornith. Works Lord Tweedd., Appendix, p. 656 (*partim*).

Siphia elegans (Temm.); Sharpe, Cat. Birds B. M. iv. p. 447 (♀).

Siphia lemprieri, Sharpe, Ibis, 1884, p. 319; id. ibid. 1888, p. 199 (*partim*); Everett, Journ. Straits Br. R. As. Soc. (1889) xx. p. 133; Whitehead, Ibis, 1890, p. 48 (*partim*).

Cyornis herioti, Wardlaw-Ramsay, Ibis, 1886, p. 159 (*partim*).

Siphia ramsayi, W. Blasius, Ibis, 1888, p. 373; id. Ornis, 1888, p. 303.

The type of *Siphia lemprieri*, Sharpe, was a male bird in adult plumage collected by Mr. Lempriere's hunter at Marási Bay, in Palâwan. The female had already been procured by myself as early as 1878 at Puerto Princesa, but it was overlooked owing to Lord Tweeddale having catalogued the specimen as *Cyornis banyumas*, ♀. Subsequently Dr. Sharpe catalogued my bird as *Siphia elegans*, ♀, and in 1886 Major Wardlaw-Ramsay identified it with his new *Cyornis herioti* from Luzon, while in 1888 Dr. Blasius re-described *S. lemprieri* and gave it the title of *S. ramsayi*. Finally, in 1889 I pointed out, in my 'List of the Birds of the Bornean Group,' that the bird obtained by me at Puerto Princesa was undoubtedly the hen of *S. lemprieri*, a conclusion which is now confirmed by a series of both sexes recently collected in Balâbac and S.W. Palâwan.

As the female of this species does not appear to have been described, I append the following note of an adult specimen shot in Balâbac on Dec. 26, 1893:—Forehead, crown, and occiput dark plumbeous grey, washed with olive, each feather with narrow obsolete transverse bars, which are most pronounced on the forehead; sides of neck, mantle, scapulars, and back warm olivaceous brown, deepening posteriorly into bright ferruginous brown on the upper tail-coverts; rectrices dark sepia brown, the exterior webs ferruginous brown, except on the two central quills, which are wholly ferruginous brown, and all showing in certain lights close obsolete transverse bars; under surface of the quills hair-brown; primaries dark brown, and all except the first and second margined basally on the outer webs by a thin line of ferruginous brown; the secondaries and tertials also dark brown, but increasingly margined bright ferruginous brown until the entire outer webs are of the latter colour; under-wing-coverts, axillaries, and edges of wings white, tinged with buff; major wing-coverts dark brown, with bright ferruginous-brown outer webs; the other coverts broadly tipped with bright ferruginous brown; a conspicuous line from the nares over the eye and reaching nearly to the posterior angle of the orbit, and a line fringing the lower margin of the orbit, pure white (tinged with buff in some examples); lores black; ear-coverts dark grey, washed with olive; cheeks the same, but rather darker grey; sides and flanks olive-grey, washed with buff; chin white; throat pale buff, passing into deep orange-buff on the breast, on the sides of which some of the plumes show obsolete dusky margins; abdomen and lower tail-coverts white; thigh-plumes dark grey, edged with white. Length 5·80 inches, culmen 0·68, wing 2·90, tail 2·35, tarsus 0·68.

In another female from Balâbac the dimensions are rather less, but in my original Puerto-Princesa specimen they agree very closely. This species is marked by its large bill. The culmen in the type-skin of the male, measured from its insertion in the skull, is 0·70 inch, and it is the same in a female collected by Mr. Whitehead at Taguso in Palâwan.

Dr. Sharpe was evidently in error in regarding *S. lemprieri* as a Palâwan representative of *S. philippinensis*, for both sexes of the latter are blue. Moreover, *S. philippinensis* is a representative form of *S. banyumas*, which itself occurs in Palâwan, a male bird having been obtained by me at Puerto Princesa in 1878, and a second male having been procured by Mr. Whitehead on July 21, 1887, at Taguso. *S. lemprieri* rather appears to be a representative of *S. magnirostris*

(Blyth), which ranges from Sikkim to Tenasserim, and which, while the plumages of both sexes show a fairly close general resemblance, has a culmen (measured as above) of 0·80 inch in the male, and 0·72 to 0·74 in females from the latter locality.

The series of *S. lemprieri* obtained by Mr. Whitehead and myself demonstrates that the very young birds have a spotted plumage, that the male then passes into the plumage of the adult female, and that from the latter it moults directly into the blue plumage of the adult, the blue feathers appearing first on the forehead and upon the upper wing-coverts. I have no record of the coloration of the soft parts in Balâbac specimens, but on the label of the female collected at Puerto Princesa they are noted: "Iris chocolate; bill black; legs lead-grey."

*26. ÆTHOPYGA SHELLEYI, Sharpe.

27. CINNYRIS AURORA (Tweedd.).

28. ANTHREPTES MALACCENSIS (Scop.).

29. MYZANTHE PYGMÆA (Kittlitz).

30. PRIONOCHILUS JOHANNÆ, Sharpe.

31. MUNIA JAGORI, Cab.

Only immature specimens were obtained, so that this identification is open to question.

32. UROLONCHA EVERETTI (Tweedd.).

33. CALORNIS PANAYENSIS (Scop.).

34. EULABES PALAWANENSIS, Sharpe.

35. CORVUS PUSILLUS, Tweedd.

Birds of this species are solitary in their habits, and I only once observed as many as three together. They frequent the trees by the sea-shore, and even the mangroves, as well as the jungle inland, but they never enter the native villages, in this particular and in their non-gregarious habits presenting a notable contrast to the Philippine Crow. The note is rather feeble for the size of the bird. It may be syllabled "Uàk," uttered quietly in a guttural tone, generally only once, when it may readily be mistaken for the croak of a large frog; but sometimes it is repeated four or five times rapidly in succession, when it equally reminds one of the quacking of ducks. Judging from its note and habits, *C. pusillus* is a Raven rather than a Crow. According to Steere this bird is not confined to the Balâbac-Palâwan group of islands, but occurs also in Mindoro.

*36. PITTA PROPINQUA, Sharpe.

Brachyurus propinquus, Sharpe, Tr. Linn. Soc., ser. 2, Zool. i. p. 330.

Pitta propinqua, Sharpe; Sclater, Cat. Birds B. M. xiv. p. 443 (*partim*); Whitehead, Ibis, 1893, p. 505.

Pitta erythrogastra, Everett, Journ. Str. Br. R. As. Soc. xx. p. 148 (*partim*).

Dr. Sharpe founded his *Brachyurus propinquus* on an adult male bird obtained by Dr. Steere in Balâbac. Dr. Steere obtained a second specimen of a red-bellied Pitta, also a male, but in very immature plumage, at Dumalon, near Zamboanga, in Mindanao, and this bird Dr. Sharpe assigned also to *B. propinquus*, though not without hesitation. Owing to the meagre material available, the validity of this species has always been open to question; and hence I made a point of securing a series of these red-bellied Pittas from Balâbac and Palâwan, with the result that it has at length become possible to compare adult birds from Balâbac with adult birds from Luzon, Mindanao, and Palâwan.

The characters relied upon by Dr. Sharpe as distinguishing *P. propinqua* from typical *P. erythrogastra* were:—(1) *Back* entirely cobalt, including the *scapulars*; only the middle of the back green, washed with blue, forming a band across the back. (2) *Throat* entirely brownish black, becoming jet-black on the fore neck. (3) *Chest* bright blue, the sides only greenish. (4) *Under wing-coverts* dull blue, instead of greyish brown.

Of these characters the last three appear to be of no value, as birds from Luzon and Mindanao present them in greater or less degree, and I have come to the conclusion that they belong to the fully-adult birds, from whatever locality. But on viewing the upper surfaces of a series of Balâbac-Palâwan specimens side by side with a series of Luzon-Mindanao birds, the first-mentioned character is at once seen to be a good one, the green tract on the backs of the former series forming a comparatively narrow band, whereas in the latter series it extends nearly to the rump. It is noticeable, further, that the cobalt and green hues are much brighter than in any of the specimens from Luzon or Mindanao, though it is no doubt very possible that this may be owing to the freshness of the Balâbac-Palâwan skins.

I have, therefore, no longer any doubt that *P. propinqua* differs sufficiently from *P. erythrogastra* to make it necessary that it should be separated from the latter by the appropriate appellation which Dr. Sharpe originally bestowed upon it. And in this case it will follow that the locality "Mindanao" given in the 'Catalogue of Birds' will require correction, as, indeed, it would in any case, for the type was described from Balâbac.

37. Pitta atricapilla, Less.

Brachyurus sordidus (Müll.); Sharpe, Tr. Linn. Soc., ser. 2, Zool. i. p. 331.

Dr. Sharpe (*t. c.*) says that the Bornean *Pitta muelleri* is distinguished from *P. atricapilla* by the almost entire absence of the black abdominal patch, and by having the thighs blackish instead of ochraceous brown. The large extent of the black patch in the latter species is without doubt a stable character, for although one occasionally meets with individuals of *P. muelleri* which have the black on the belly of very markedly larger extent than is found in the ordinary run of these birds, it never attains to the development constantly presented by adult birds of *P. atricapilla*. The coloration of the thigh-plumes, on the other hand, seems subject to a good deal of variation in the Bornean species. In a series of fourteen skins from Balâbac and Palâwan before me, the thighs are uniformly russet-grey with a faint wash of pale green in some instances, and a few have obsolete blackish spots on the centres of a number of the feathers. Comparing this series with skins of *P. muelleri* from N.W. Borneo, I find that two of the latter, both males and shot at Lumbidan in May 1892 and July 1893 respectively, have the thighs sooty black, but a female, also shot at Lumbidan in July 1893, has the thighs uniform ochraceous brown, and several specimens from the western part of Sarawak exhibit as light a plumage as this hen-bird from Lumbidan. In very young birds the colour of the thighs is uniform dark grey. Mr. Whitehead ('Ibis,' 1893, p. 499) has noted that, in addition to the character of the abdominal patch, *P. atricapilla* is distinguished by the metallic colour of the shoulder-patch and rump-band being deeper and of a silvery blue.

38. Chrysocolaptes erythrocephalus, Sharpe.

39. Hemilophus pulverulentus (Temm.).

40. Tiga everetti, Tweedd.

41. Alcedo bengalensis, Gm.

42. Alcedo meninting, Horsf.

43. Pelargopsis gouldi, Sharpe.

Pelargopsis leucocephala, Sharpe, Ibis, 1888, p. 197.

44. Ceyx euerythra, Sharpe.

*45. Halcyon pileata (Bodd.).

46. Anthracoceros lemprieri, Sharpe.

Anthracoceros lemprieri, Sharpe, Nature, May 14, 1885, xxxii. p. 46.

A. marchei, Oustalet, Naturaliste, July 15, 1885, p. 108.

The iris in the adult male is pure crimson-lake, in the female indian-red, and in the young bird a paler tint of indian-red; bill ivory-white; bare skin on the head bluish white; feet dark olivaceous grey; claws dark grey. The three birds from which these notes were taken were shot together on Dec. 27, 1893.

47. Cacomantis merulinus (Scop.).

48. Surniculus lugubris (Horsf.).

*49. Dryococcyx harringtoni, Sharpe.

50. Centrococcyx eurycercus, Hey.

*51. Cacatua hæmaturopygia (P. L. S. Müll.).

*52. Prioniturus cyaneiceps, Sharpe.

Prioniturus discurus, Sharpe, Tr. Linn. Soc. ser. 2, Zool. i. p. 312.

P. cyaneiceps, Sharpe, Ibis, 1888, p. 194.

P. plateni, W. Blasius, Ibis, 1888, p. 372; id. Ornis, 1888, p. 305.

The coloration of the soft parts is as follows:—Bill whitish; feet plumbeous grey; iris deep chocolate-brown.

53. Astur trivirgatus (Temm.).

54. Spilornis davisoni, Hume.

Spilornis davisoni, Hume, Str. F. i. pp. 305, 422 (1873).

Spilornis melanotis, Jerdon; Sharpe, Cat. Birds B. M. i. p. 289 (*partim*).

? *Spilornis bacha*, Whitehead, Ibis, 1890, p. 42.

? *Spilornis pallidus*, Steere, List Birds Steere Exped. 1890, p. 7.

Mr. Whitehead, in his list of Palâwan birds, enumerates *Spilornis bacha* as having been shot by him on that island; but he did not preserve the specimen as it was damaged, and he believed that he recognized it correctly. Dr. Steere (*t. c.*) also records the occurrence of a *Spilornis* in the same island and catalogues it as *S. pallidus*. I have been so fortunate as to obtain three examples, one from Balâbac and two from Palâwan, which there can be little doubt, I think, belong to the same species as the birds recorded by Messrs. Whitehead and Steere. On comparison with the other species of Serpent-Eagles in the Natural History Museum, they come so exceedingly close to *S. davisoni*, Hume, which was originally described from the Andaman Islands, that I think the safest course, in view of the existing uncertainty as to the number of species in this group of birds, is to record the Balâbac-Palâwan species under Hume's title. My specimens are rather more rufous, and the zigzag "watering" on the breast somewhat more pronounced, than appears to be usual in Andaman and Malacca skins, but this may be only because the latter have faded. The three specimens resemble each other closely, and they do not recall any phase of plumage either of *S. bacha* or *S. pallidus*, so far as my own experience goes. I may mention that I did not see any of my specimens in the flesh, and I am therefore unable to record any particulars as to the coloration of the soft parts. The Balábac specimen was shot in the S.W. monsoon; those from Paláwan in the N.E. monsoon.

55. BUTASTUR INDICUS (Gm.).

56. PANDION LEUCOCEPHALUS, Gould.

One specimen shot, but not preserved. It appeared to belong to this species and not to *P. haliaëtus*.

*57. DEMIEGRETTA SACRA (Gm.).

Ardea jugularis, Steere, List, 1890, p. 26.

*58. BUBULCUS COROMANDUS (Bodd.).

59. GORSACHIUS MELANOLOPHUS (Raffl.).

60. TURTUR TIGRINA (Temm.).

61. MACROPYGIA TENUIROSTRIS, G. R. Gray.

*62. CARPOPHAGA ÆNEA (L.).

*63. CARPOPHAGA BICOLOR (Scop.).

*64. MEGAPODIUS CUMINGI, Dillwyn.

*65. GALLUS BANKIVA, Temm.

66. RALLINA FASCIATA (Raffl.).

*67. CHARADRIUS FULVUS, Gm.

68. TRINGOIDES HYPOLEUCUS (Linn.).

II. NOTES ON THE BIRDS OF PALÂWAN.

The last complete list of the birds of Paláwan was that of Mr. J. Whitehead published in 'The Ibis' in January 1890, when a total of 157 species was recorded. Having visited Rocky Bay, in S.W. Paláwan, during the latter half of

January and the beginning of February in the present year, I am enabled to place on record ten more species, and at the same time to add a few supplementary notes to Mr. Whitehead's paper.

Phylloscopus xanthodryas, Swinhoe.

One male specimen, shot in January. New to the Palâwan sub-group, though recorded several times as a winter migrant to Northern Borneo.

Cittocincla nigra, Sharpe.

I found these birds fairly common in the belt of dense jungle lining the sea-shore. Like *C. stricklandi* and *C. suavis*, they are extremely shy, and never frequent the close vicinity of human habitations, wherein they differ conspicuously from their close allies the *Copsychi*. The latter birds show even a preference for cultivated grounds and for houses, perching on the verandah-rails and singing to their hearts' content in the presence of the occupants, and hopping into the rooms to pick up food beneath the tables, when they think they are unobserved. The song of *Cittocincla nigra*, at any rate when pairing, bears a close general similarity to that of *Copsychus musicus* and *C. amœnus*, but its range of notes is perhaps scarcely so considerable and the voice is weaker.

Orthotomus ruficeps (Less.).

Mr. Whitehead notes that this Tailor-bird was scarce in Palâwan, but I have found it abundant in the shore-jungle. The belt of forest lining the shore in Palâwan is characterized by the invariable presence of this and the preceding species, together with a number of others, viz., *Mixornis woodi*, *Ægithina viridis*, *Buchanga palawanensis*, *Rhipidura nigritorquis*, *Æthopyga shelleyi*, *Chalcostetha insignis*, *Cinnyris aurora*, *Anthreptes malaccensis*, *Calornis panayensis*, and *Megapodius cumingi*. Of course, a great many other species are met with, but those mentioned above may be always found in such situations.

Motacilla flava, L.

Birds shot in the middle of January had already begun to moult into the spring plumage, as pointed out to me by Dr. Sharpe. These Wagtails, with *M. melanope*, frequently associate with the flocks of migratory waders on grassy spaces and muddy flats bordering the beach, running about among a mixed crowd of *Ægialitis geoffroyi*, *Æ. dubia*, *Strepsilas interpres*, &c., and hunting for food among them with perfect unconcern. I have also observed them frequent coral-reefs when laid bare at ebb-tide.

Motacilla melanope, Pallas.

Far less abundant than *M. flava* and not occurring in flocks, as the latter so often does. This migrant is not recorded in Mr. Whitehead's list.

Motacilla ocularis, Swinhoe.

Not uncommon, but decidedly scarcer than the preceding species. New to Paláwan.

Anthus rufulus, Vieill.

A single specimen obtained. New to Paláwan.

Anthus cervinus, Naum.

New to Paláwan.

Hylotherpe whiteheadi, Sharpe.

This species appears to affect the hill-country rather than the lowlands. Dr. Sharpe (Ibis, 1893, p. 551) has recorded it in his "Bornean Notes" as among the birds collected by me on Mt. Penrisen in Sarawak. This *lapsus calami* is patent, the Penrisen bird being, of course, *H. hypoxantha*, between which and *H. whiteheadi* there is only generic resemblance.

Artamides sumatrensis (S. Müll.).

These birds appeared to me to be much more common in Paláwan than in N.W. Borneo, and I think that their habits are somewhat different. In Borneo they affect the lofty virgin forests and seem to keep pretty much to the crowns of the higher trees; but in Paláwan they haunt chiefly the lower trees, and I have seen them not only among the scrub skirting the beach and among the mangroves, but even on the sands at the edge of the jungle. They fly strongly, but rather heavily, for short distances, and then stiffen their wings and float for fifty yards or thereabout, and recommence their flight and again float on extended pinions; but they soon begin to sink earthward, and I doubt whether they can continue the hawk-like floating for any considerable distance. They have a shrill whistling cry, and they are not gregarious.

Hemichelidon ferruginea, Hodgson.

Three specimens shot in the hill-country. This species is new to Palâwan, but *H. sibirica* has also been obtained by Dr. Platen, both being doubtless winter migrants from Southern China. It is impossible to separate *H. cinereiceps* of Kina Balu from *H. ferruginea*. Dr. Sharpe, after an examination of my specimens, agrees with this conclusion.

Culicicapa panayensis, Sharpe.

Found by my hunters only among the hills up to about 3000 feet, where it seemed to be rather abundant, as a small series was obtained within a few days. The Palâwan birds do not appear to differ from typical specimens.

Chalcostetha insignis (Jard.).

A common species, especially in the mangrove-swamps, a situation which has great attraction for all the species of Sun-birds in Palâwan. These birds were pairing early in February, and when walking through such a swamp one morning I was a witness of the whole process of their courtship. The cock bird would perch on a twig within a foot or two of his mate, draw himself up stiffly erect, slowly tilt his head back until his beak pointed to the sky, and so remain for a space motionless as a statue. He evidently made a point of always fronting the morning sun, and the curious attitude of the head, causing the refulgent gorget to swell outward, is no doubt assumed for the purpose of causing its beams to play upon the metallic plumage of the throat. The hen meanwhile would pretend to be busy hunting for food, but it was clear that she was fully conscious of her mate's display, for an incessant rapid quivering agitated her whole body and she kept up a continuous low twittering sound. Presently the cock would fly close to her and flutter around her with half-spread wings, and as the wings were raised the fluffy pectoral tufts were instantly displayed, every hair-like plume apparently starting erect and radiating, so that they resembled ball-like blossoms of rich orange-yellow. These actions were repeated many times until the birds flew out of sight; and they *seemed* to indicate that the male bird was conscious that the play of the sunlight on his gorget brought out its brilliancy, and that the birds had the same sense of colour in kind, if not in degree, as a human being possesses.

ANTHREPTES RHODOLÆMA, Shelley.

Three specimens. New to Palâwan.

ARACHNOTHERA DILUTIOR, Sharpe.

Two specimens, noted as females by my hunter, exhibit small pectoral tufts of a yellower hue than is the case in male birds. I find that three specimens shot and noted from dissection as females by myself at Puerto Princesa also have pectoral tufts, but smaller and paler in hue than in male birds. It seems curious that an error should have occurred in all five instances and young males have been determined as females; but I do not feel confident that this may not have been so. The eye-wattle in this bird is quite inconspicuous in dried skins, but in the living bird, when alarmed or excited, it becomes distended and forms a prominent circlet of brilliant lemon-yellow.

CALORNIS PANAYENSIS (Scop.).

These glossy Starlings were quite the commonest species in the shore-jungle and even in the mangrove-swamps at Rocky Bay in January and February. By far the greater number were in immature streaked plumage, with the shining dark green of the mature plumage only beginning to show, so that it is clear that they take fully a year in assuming the adult livery, if not longer. At the time of my visit there occurred at frequent intervals along the shore perfectly leafless trees (*Erythrina*?) bearing abundance of large pyramidal bracts of pure scarlet-lake flowers and branches of long black seed-pods. These trees, which were visible from a great distance, formed a constant attraction to a variety of birds, and particularly so to the Starlings, every one being tenanted by a flock of them in the early morning. The attraction seems to consist in a drop of sweet liquid which lies at the bottom of each flower, and which I often saw the Starlings engaged in sipping. The Cockatoos and Parrots appeared to bite off the flowers, as their short beaks prevented their getting at the nectar otherwise. Besides these birds, *Chloropsis palawanensis*, *Ægithina viridis*, *Buchanga palawanensis*, *Artamides sumatrensis*, *Corvus pusillus*, and all the Sun-birds and Flower-peckers may be seen at one and the same time on a single tree, while at intervals a troop of monkeys will invade it, tearing off entire bunches of flowers, biting a few and then flinging them down on the beach below. Where the trees overhang the shore, the sand is thickly strewn with the petals and bunches of the flowers, and seen from a distance it appears as if glazed with a stream of arterial blood flowing down the beach to the brink of the sea. It would be difficult to imagine a more gorgeous bit of tropical colour than is presented by one of these trees thickly studded with large, brilliant scarlet-lake pyramids of bloom, and, perched or flying among the naked branches, snowy-white Cockatoos, rich golden and black Orioles, shining malachite-green *Tanygnathi* and *Prionituri*, with a crowd of smaller birds,—all lit up by the fresh morning sunlight on a background of pale blue sky. Dry skins afford no adequate idea of the gloss of plumage and its purity of hue when the living birds are seen under the above conditions.

PITTA PROPINQUA, Sharpe.

Pitta erythrogastra, Sharpe, Ibis, 1888, p. 200; Everett, P. Z. S. 1889, p. 225; Whitehead, Ibis, 1890, p. 50, and 1893, p. 504.

It may be safely assumed that the descriptions of the young plumage and of the soft parts of *P. erythrogastra* in Mr. Whitehead's review of the *Pittidæ* in 'The Ibis' for 1893 were taken from Palâwan birds, and that they do not, therefore, appertain to true *P. erythrogastra*, although it is probable that the same description would apply to both species.

Batrachostomus javensis (Horsf.).

Batrachostomus cornutus, Sharpe, Ibis, 1888, p. 198; Everett, P. Z. S. 1889, p. 226; id. Journ. Str. Br. R. As. Soc. 1889, p. 165; Whitehead, Ibis, 1890, p. 46.

The only specimen of this species known from Palâwan was collected by Mr. Whitehead, and it is now in the Tring Museum. Mr. Hartert identifies it with *B. javensis*.

Batrachostomus affinis, Blyth.

A single specimen obtained at Rocky Bay on Feb. 7th was in pure rufous plumage. It was a female, and one of the embryos in the ovarium was in an advanced stage of development, showing that these birds were breeding at the above date. The wing measured 4·85 in., the other measurements agreeing with those given in the British Museum Catalogue by Mr. Hartert, who, with Dr. Sharpe, considers the bird to be undoubtedly *B. affinis*. The individual in question was shot in the jungle close to the shore, and the soft parts were as follows:—Iris golden yellow; bill sienna-brown, the mandible pale yellow, tinged more or less with sienna-brown; gape pale yellowish, almost white; feet dirty light brown; nails sepia-brown. This specimen is also in the Tring Museum.

Circus spilonotus, Kaup.

Mr. Whitehead (Ibis, 1890, p. 43) mentions having seen a Harrier in Palâwan, which he identified with *C. spilonotus*. The accuracy of his observation is now proved by the acquisition of a young bird of the present species by my hunters at Rocky Bay in January.

Spilornis davisoni, Hume.

See remarks above on the Balâbac *Spilornis*.

Accipiter virgatus (Reinw.).

Not hitherto recorded from Palâwan, where it occurs probably only as a winter migrant.

Butorides amurensis, Schrenck

Ardetta macrorhyncha, Gould, P. Z. S. 1848, p. 39.

Butorides javanica, Everett, Journ. Str. Br. R. As. Soc. 1889, p. 189 *partim*).

This large race migrates to Palâwan and Northern Borneo, and in both localities occurs with true *B. javanica.*

STREPSILAS INTERPRES (L.).

Turnstones were seen every day on the pebbly beach at Rocky Bay associating with the other migratory shore-birds and running about actively and tilting the small stones over with their beaks. On one occasion as many as eleven were counted together.

III.—*Notes on the Auckland-Island Shag* (Phalacrocorax colensoi). By Sir WALTER L. BULLER, K.C.M.G., D.Sc., F.R.S.

MR. H. O. FORBES, in his paper "On the Birds inhabiting the Chatham Islands," which appeared in 'The Ibis' for October 1893, describes, under the name of *Phalacrocorax rothschildi*, a Shag found at the Chatham Islands and in the south of New Zealand, separating it from *Phalacrocorax colensoi* and saying: "this species is at once distinguished by the approximation of the dark plumage of the head beneath the throat, leaving a comparatively narrow white stripe between them." He also makes the possession of both the white alar bar and the white dorsal spot characteristic of his new species.

In my opinion we have a good deal more to learn about the Shags inhabiting New Zealand and the adjacent islands; and I think Mr. Forbes was somewhat rash in characterizing a new species without further investigation.

The type of my *Phalacrocorax colensoi* was from the Auckland Islands; but (like all the other specimens collected there by Mr. Burton at a wrong season of the year) it was in old and faded plumage, with dingy colours. Quite recently, however, I have had an opportunity of examining a large number of skins, in good plumage, collected by Mr. Henry Travers at the Auckland Islands and on Campbell Island during the last cruise of the Government gunboat 'Hinemoa.' The examination of this collection has satisfied me that Mr. Forbes's "characters" are of very little value. The form and width of the white stripe down the fore neck, the presence or absence of the alar bar and of the dorsal patch of white, are inconstant features, due apparently to age or season. It will probably be found, when we become better acquainted with the species, that the bird is caruncnlated at one season and not at another; for all the specimens brought by Mr. Travers (killed in May) are without caruncles on the face. They include adult birds, of both sexes, but presenting very different phases of plumage. In three of them there is a slight coronal crest, the feathers being acuminate and produced beyond the ordinary plumage of the head; in some the alar bar is very conspicuous, occupying the whole of the median wing-coverts, in others it is broken and irregular; in one of the birds it is wholly absent, whilst in another the only indications of it are a few scattered white feathers among the dark wing-coverts. Of the whole series only one presents the white dorsal spot. The white throat-stripe is very uncertain in character: in some of the specimens it widens gradually from the chin to the throat, whilst in one of them it is narrow and of even width in its whole extent; in some it is constricted in the middle, and in one of them the dark plumage of the sides of the neck almost meets above the breast, the white stripe being interrupted and broken. Out of the whole lot only one gives the wing-measurement of my type, namely, 10·5 inches. In all the others the wing, from the flexure, measures 11 inches. It will be seen, therefore, that even in this respect the species is variable.

The fact is that this Shag, like many others in all parts of the world, varies with age and season, and the only course, so far as I can see, is to make the characters of *Phalacrocorax colensoi* somewhat wider.

IV.—*Notes on the Nidification of some Indian Birds not mentioned in Hume's 'Nests and Eggs.'*—Part I. By E. C. Stuart Baker, F.Z.S.

1. **Dendrocitta frontalis.** (*Oates*, Fauna of British India, Birds, i. p. 33.)

This handsome Magpie breeds freely to the east of North Cachar on all ranges over 4000 feet high. The nest is much like that of *D. himalayensis*, but is, on an average, somewhat smaller. It is made of fine twigs and the stems of creepers and weeds, the last less invariably used than the two former. In nine cases out of ten there is practically no lining, but in two nests I have seen a scanty amount of mithna and goat's-hair placed at the very bottom, and in a few others I have found a sort of rough lining of coarse fern-roots, the softer stems of green weeds, or the finer roots of bamboos. Always, however, the lining, if existing at all, is coarse and by no means abundant. The nest is in shape a shallow cup, rather flimsy and transparent, but more so in appearance than in reality, for, though one can always see through it, the materials are well intertwisted and stand a great deal of rough handling before coming apart. The size of the nest ranges from under 5″ to 7″ in diameter, and the depth from about 2″ to 3″·5 or rather more; nests measuring over 6″·5 are rare, and the average is only about 6″, outer diameter; the inner cup averages about 5″ by 1″.

The nest is seldom built at any great height from the ground, generally below six feet, and often within two or three. It is placed in the fork of a bush, a small sapling, or even in a stout weed, and the situation preferred is one in scanty forest with a thin undergrowth of weeds and scraggy bushes. In *dense* evergreen forest I have never found the nest, though I have seen the birds, but I have taken two or three in the outskirts of evergreen forest where the trees were few and far between, and the principal growth consisted of tall bushes and thick, low lime-bushes. The eggs can nearly all be matched with others, either of *D. rufa* or *D. himalayensis*, but, taking a series of them, they present a much richer appearance. I have met with none similar to the commonest type of egg of *D. rufa* (in which the ground is a pale salmon-buff colour, profusely marked with reddish), and, on the other hand, a great many eggs are of a far more decidedly green tinge, both as regards ground-colour and markings, than are *any* of the eggs of that bird, or one in fifty of *D. himalayensis*.

Beyond saying that in typical eggs of *D. frontalis* they are more numerous, there is nothing to add as regards the character and distribution of the markings to what has already been said of the eggs of *D. rufa* by Oates, and in texture and shape they also very closely resemble these eggs, though they average somewhat smaller and broader.

Thirty-six eggs average 1″·08 by 0″·83, and in length range between 0″·98 and 1″·21 and in breadth between 0″·80 and 0″·87.

They breed in Cachar from the middle of April up to the end of July.

2. PARADOXORNIS FLAVIROSTRIS. (*Oates*, op. cit. i. p. 62.)

The majority of the nests I have found of this Crow-Tit have been very deep, compact, well-made cups, outwardly composed of shreds of grass-blades and very fine strips of the stems, equally fine and narrow pieces of bamboo-leaves, and *very, very* rarely one or two exceedingly fine pliant twigs, matching in colour the yellow or reddish yellow of the other materials. The lining is, as a rule, formed of even finer scraps torn from the inner bark of ekra-stems, but on one occasion I found a nest lined with buffalo-hair; this, however, must have been a very abnormal nest, and it is unlikely I shall ever see such another.

Some nests, while resembling the above in every other particular, differ only in shape, being broad shallow cups. The difference cannot be better shown than by giving the measurements of two nests, one of each type:—1st, outer diameter 3″·7, inner diameter 2″·6, outer depth 3″·2, inner depth 2″·4; 2nd nest, outer diameter 4″·1, inner diameter 3″·2, outer depth 2″, inner depth 1″·4.

Both the above-mentioned nests are slightly larger than most, but the proportions are all equally above the average. Gammie's description of the nest of *Scæorhynchus ruficeps*, in which he says, "The material used is particularly clean and new-looking, and has not the second-hand appearance of so much of the building-stuffs of many birds," is also very applicable to this bird's nest, and, indeed, all the nests of this bird, *Scæorhynchus ruficeps*, and *S. gularis* seem to be of the same style and character. I must now have taken over a dozen nests of each kind.

Fully three nests out of four are built in bamboo-clumps at heights varying from four to eight feet, and generally in some thick cluster of twigs well on the outside of the clumps. Less often it may be found on a small sapling, or even on a dead branch of some small tree, but wherever it is there appears to be not the slightest attempt by the bird at concealment, and the nest is often very conspicuous from some distance. It is never, I believe, built in thick jungle, but generally in thin scrub or bamboo-jungle, more seldom in thin tree-forest.

One clutch of three eggs are in colour a very pale greenish white, so faintly tinged with green that they *appear* white unless placed against some egg or other article which is really so. The markings consist of spots, varying in size from small specks or freckles to large irregular blotches, of a pale olive or umber-brown, with a few secondary small dots of pale lavender. These last are principally confined to a ring about the larger end, but the others are irregularly scattered over the whole egg. In the centre of some of the larger pale patches, and also elsewhere, are a few very fine twisted and tangled lines of dark amber.

Other eggs vary only in having the ground-colour a brownish or yellowish white. One rather abnormal clutch of two eggs are white, with a very few faint specks of pinkish brown disposed in an indistinct ring round the extremity of the larger half.

In shape they are regular ovals, though not quite so regular as those of the genus *Scæorhynchus*. The texture is fairly close, but rather chalky, and very fragile for the size of the egg; the surface in one or two of the darkest eggs only exhibits a very faint gloss.

Three is the usual number of eggs laid, sometimes four, and often but two, for thrice I have taken this number hard-set. They seem to breed principally at the end of May and the beginning of June.

3. Suthora atrisuperciliaris. (*Oates*, op. cit. i. p. 67.)

I have taken but one nest of this bird, which was found on the 7th of July, 1893. It was first found by a Naga, who was searching for nests for me, and who, in accordance with the instructions he had received, set some nooses about the the nest to trap the parents, and then came to take me to it. On my arrival I found the female caught, and before taking the nest I waited some time to see whether the male also would come, but as he failed to put in an appearance I took the nest and the single egg it contained.

Outwardly the nest is composed of fine shreds of grass and whitish grass-bark; within this are a considerable number of pieces, rather broad, of bamboo-leaves; and, finally, it is lined with a small amount of dark-coloured grass-stems, the dark outer bark of some weed, and two or three tiny scraps of tree-bark. The colour of the exterior is yellowish white, that of the interior darker and browner. The general character of the nest is typical of the subfamily, but it is far less neat and less compact than that of either *Paradoxornis* or *Scæorhynchus*. In shape it is a deep cup, measuring outwardly about 3″·1 by 2″·15, and inwardly 1″·80 by 1″·7. It was placed in a thick bamboo-clump, in a cluster of twigs growing from a bamboo quite on the outside of the clump, and was rather over six feet from the ground. The clump in which it was built was one of five or six which were growing on a steep hill-side, scattered about over a large extent of sun-grass, which grew about three to four feet high. The elevation of the mountain where it was taken is over 8000 feet.

The egg is not at all what one would have expected to find laid by any bird of this subfamily, at all events judging from those of its nearest relations, the eggs of which are known. In colour it is a uniform pale bright blue, approximating most closely in general tint to the eggs of *Trochalopterum lineatum*, but paler and brighter. The texture is smooth and close, but, like that of *Paradoxornis*, slightly soft or chalky. It has a decided, though slight, gloss. The shape is a regular oval, very little compressed towards the smaller end, which is but insignificantly smaller than the other. It measures 0″·77 × 0″·6.

Some three years ago a Naga brought a nest and egg of this bird to me, but I disbelieved him when he told me to what bird it belonged, and threw away the nest without taking any notes. The egg I kept, and, comparing it now with the one *I know* to be authentic, I can see practically no difference beyond the fact that it is much smaller, measuring 0″·73 by 0″·53, and is a longer oval; the colour, texture, &c. are the same, and I fancy it is really an egg of this *Suthora*.

4. DRYONASTES SANNIO. (*Oates*, op. cit. i. p. 76.)

I have only found this bird breeding in one place in North Cachar, the Laising Valley, which is over 2500 feet above the plains. Bordering the stream, which runs through it, on either side is evergreen forest, the ground rocky, but here and there rather densely covered with bush-jungle and with a carpet of soft moss, wild caladiums, maiden-hair and other ferns; it was in such a place as this I got my first nest. In general appearance it was like the nests of *D. ruficollis*, but was larger and more massive in proportion. Outwardly it measured fully 6″·6 in diameter, and the external depth was about 4″, the measurements inside being about 3″·5 by 2″·5. All the materials used were very dark, and consisted of dead, almost rotten, sun-grass, fern, and moss-roots, a few dead bamboo-leaves, and one or two other leaves, all bound together with soft weed-stems and a few tendrils, and lined with coarse fern-roots and fern-stems. Other nests taken since resemble this one very closely, and differ from it merely in size, the diameter outside varying between 5″·5 and 7″, and the materials consisting sometimes of certain of the articles mentioned above, sometimes of others of them, but the lining of all I have seen has been the same. In nearly all nests, also, the preponderating material used is dead grass.

The bush selected as a site may be a lofty one or a low bushy one; once I have taken the nest from a small sapling about twenty feet from the ground. Three appears to be the full complement of eggs laid, and whilst I have never seen four in a clutch, I have several times seen two eggs much incubated. They are, of course, blue in colour, but they are of a beautiful satiny texture, not easy to describe. The surface is very smooth, and feels to the touch the same as do eggs of *Batrachostomus* and of the Capitonidæ. Of the Crateropodinæ, the eggs which approach nearest are those of *Stactocichla merulina* and *Trochalopterum virgatum*, and, to a less extent, *T. lineatum*, but as neither of the former birds' eggs are at all known, I believe, except to myself, it is not of much use to cite them for comparison. The shade of blue or blue-green is much the same as in the egg of *D. cærulatus*, but shows rather more gloss, though never to anything like the extent to be seen in the eggs of *D. ruficollis*. In shape they are rather long, blunt ovals, somewhat compressed and drawn out towards the smaller end.

Twenty-four eggs average 1″·19 by 0″·79. The longest is 1″·26, and the broadest 0″·83, the shortest and narrowest being 1″·12 and 0″·70 respectively.

5. Garrulax gularis. (*Oates*, op. cit. i. p. 81.)

This handsome but rare Laughing Thrush is found in some numbers to the east and north-east of the Cachar district, breeding from the end of April up to the middle of July, April and May being the months in which most nests may be found.

The nest is like that of *Garrulax moniliger* and *G. pectoralis*, but a larger variety of material is used, and, I think, taking a considerable series, it is also better built—both more compact and better finished off at the edges, &c. In most nests the major portion of the material used will be found to consist of bamboo-leaves, other articles consisting of dead leaves, moss, and fern-roots, sometimes coarse bamboo-roots and stems of weeds, and, almost always, a great number of tendrils. The lining consists almost invariably of coarse moss- and fern-roots, mixed with leaf-stems and a few stalks of weed. I do not remember having seen any nest which did not contain a certain number of tendrils, and in some few cases these form the bulk of the nest, even the lining containing a number of fine and soft ones. The largest nest I have recorded is one which was found by a roadside in a mass of creepers, half resting on, or against, a dead stump, and within a foot of the ground. This nest was fully 7″·5 across, and the outer wall about 4″·5 deep, but the inner wall, *i. e.* that against the stump, was about 7″, it being built up higher and slightly over the internal cup, though by no means forming a domed, or even semi-domed, nest. The average size of the nest is about 6″ by 4″ externally, and some 4″ by 2″ internally.

The situation in which the nests are placed varies considerably; I have taken them from tall saplings fully twenty feet from the ground, and again have found others within a few inches of it. Perhaps more nests are found below than above four feet from the ground, heavy masses of raspberry-brambles, ferns, and other low plants forming a very favourite position for the bird as a nesting-site. Most nests are placed well inside heavy jungle or forest, but the nest I have described above as being unusually large was taken from beside a track or pathway frequently used, though the nest was so well hidden as not to be found without a careful search. Two is the normal number of eggs laid, three seldom, four never. The first eggs I obtained of this bird were pure white, and were brought to me by a Naga, together with the nest and the female; the second clutch I obtained were of the beautiful pale blue colour seen in the eggs of *Dryonastes ruficollis.* I therefore put down one of these clutches as being false, but which I could not tell; further experience, however, has proved to me that these birds lay eggs which vary from pure white to the blue already mentioned. Intermediate coloured eggs of a *very* faint blue are rare, and most eggs are either absolutely pure white or else of a decided, though pale, blue. The surface is very fine and smooth, though not so close and hard as in most *Garrulax* eggs, being in this respect more of the texture of the eggs of the genus *Ianthocincla* or *Pomatorhinus*. In shape they are long, somewhat pointed, ovals, varying from 1″·04 to 1″·22 in length, and in breadth between 0″·75 and 0″·85, the average of 32 eggs being 1″·15 by 0″·80 full.

6. Trochalopterum virgatum. (*Oates*, op. cit. i. p. 100.)

I have found this Laughing Thrush breeding only on the higher ranges close to Manipur. The nest is much like that of *T. lineatum*, but differs in being more compact and somewhat smaller. In shape the nests are deep, stoutly-built cups, the principal articles used in their construction being tendrils, dead leaves, grasses, roots, and fine bents, sometimes a few bamboo-leaves and fern-fronds, and generally a good deal of moss. The nests vary a good deal in shape, material, and other details. One, found in a thick growth of weeds and brambles, resting almost, if not quite, on the ground, had the main structure made of bamboo and other dead leaves, intermixed with moss and tendrils, and also bound outside with the latter and a few weeds, the moss projecting through, and so causing the general colour of the nest to be a dull brownish green. The lining was entirely of roots and fern-stems. This was a far deeper nest than most, the cavity being about 3″·2 in diameter and 3″·5 in depth; the outer dimensions were very large, owing to the straggling pieces of moss and bamboo-leaves. Another nest, taken from the fork of a small sapling, was more compact and neat, the external dimensions being 6″ by 4″, and the internal about 4″ by 2″·8. The materials used were much the same as in the last nest, with the exception that there were no bamboo-leaves, and, on the other hand, tendrils were even more numerous. Taking into consideration the whole of the twenty nests or so that I have seen, I should say that, typically, the nest of the bird is rather neater and deeper than that of *T. lineatum*, as described by Hume ('Nests and Eggs,' vol. i. p. 65), and that another distinctive feature is the invariable use of tendrils in its construction, these being sometimes very numerous, at other times but few in number, yet always present to a greater or less extent.

This bird breeds principally in May, a few late in April, and I have taken one nest and eggs in the middle of July.

The normal number of eggs laid is three, sometimes but two, never, so far as I know, four. I have already mentioned that the texture very closely resembles that of the eggs of *Dryonastes sannio*, and there is therefore nothing to add beyond the fact that they have a slight gloss, though rather less than is shown by the few eggs I have seen of *T. lineatum*; in colour also they are somewhat paler than these eggs, and amongst the 23 eggs I have taken there has been no appreciable difference in the shade of colouring or of the shape. This latter is a rather broad oval, but slightly compressed towards the smaller end, which is very blunt.

Twenty-three eggs average 1″ × 0″·73, the greatest length being 1″·08 and the greatest breadth 0″·76, the least being respectively 0″·98 and 0″·78. The average of fifty-eight eggs of *T. lineatum* is given by Hume as being 1″·01 by 0″·73, which is very close to the average of my eggs of *T. virgatum*, though the extremes of length and breadth given by him are far wider apart than are mine.

7. GRAMMATOPTILA AUSTENI. (*Oates*, op. cit. i. p. 104.)

I have only one very rough note on the nidification of this bird, which is as follows:—"Nest exactly like that described by Gammie as belonging to *G. striata* (Hume, 'Nests and Eggs,' vol. i. p. 67), but measuring an inch broader, that is to say, externally 8″·5 by about 6″, and internally about 5″ by 2″·3."

The nest was placed in a thick bush at a height of less than five feet from the ground. The eggs have been broken by accident, so that I cannot describe them beyond saying that they were just like some eggs of *G. striata* given me by

Mr. H. E. Barnes. They measured 1″·3 × 0″·93, 1″·3 × 0″·92, and 1″·26 × 0″·87.

8. Stactocichla merulina. (*Oates*, op. cit. i. p. 104.)

Breeds all over the east of North Cachar and in Manipur above 3000 feet, keeping principally, however, to the Laising Valley, where it is very abundant. It builds chiefly in evergreen-forest, but in 1893 I took several nests from bamboo-jungle. In the former, the evergreen-forest, the nest is generally placed in some thick shrub, either in amongst the lower twigs or branches or right down amongst the roots; in the latter it is usually built low down in some thick bamboo-clump, often well in the centre of it, sometimes on the outside, at other times almost on the ground amongst the thick clusters of small twigs and roots which spring thence. When built in the first-described sort of position the materials consist of roots, grass, bamboo and other leaves, more or less mixed with moss and bracken-fronds, and the lining is made of fern- and moss-roots, occasionally of fine creeper-stems and tendrils or very fine pliant twigs. These nests are somewhat bulky shallow cups, originally rather well built and fairly compact, but soon becoming damp and rotten from the constant dampness of these forests, so that they thus bear little handling. Nests built in bamboo-jungle differ considerably from these, and a description of the last one found would do for all or any of the others which I have taken. This is a compactly-made cup, measuring externally 4″·6 by 3″·2, and internally 2″·9 by 1″·3. The material used for the foundation and the outer framework consists entirely of bamboo-leaves, these being bound together by a few soft weed-stems and fine roots; inside this there are numerous coarse fern-roots and stringy, tough bamboo-roots, all thoroughly intertwined together; inside this, again, is the true lining, a quantity of fern- and moss-roots, mostly of the finer sort, but mixed with a few stouter ones. The base of the nest is very thick and compact, and thence the walls grow gradually thinner towards the top, where they are only some 2″ to 4″ thick, though straggling leaves, loosely fixed in weeds and roots, make the total diameter a good deal more than it would otherwise be. I have never seen four eggs of this bird in any nest, and I think two eggs or young are more often met with than three.

In colour these eggs are a very beautiful green-blue, similar to those of *Garrulax moniliger*, but brighter and clearer, and with a totally different texture, which is of the same satiny description as the eggs of *Trochalopterum virgatum*. In shape they are generally rather broad ovals, but one end is always considerably smaller than the other, usually blunt, though sometimes rather pointed, and abnormal eggs tend to have *both* ends somewhat pointed. The shell is rather more fragile than that of most of the Crateropodinæ. Forty-five eggs average not quite 1″·14 by 0″·82. Thirty eggs taken previously to 1893 average only 1″·14 by 0″·81. Fifteen eggs taken in 1893 average 1″·18 × 0″·83. The small average for the first thirty eggs is due in great measure to four abnormally small eggs, which average only 0″·99 × 0″·76, the next smallest egg I possess being 1″·12 × 0″·79. The longest egg in my collection is 1″·26, and the broadest 0″·86.

These birds breed throughout June and July, the 24th of the latter month being the latest date on which I have taken eggs.

The bird is a close sitter, and allows a person to approach very close to its nest before it leaves it and hides in the adjoining cover.

9. POMATORHINUS PHAYRII. (*Oates*, op. cit. i. p. 121.)

The nest of this bird differs from that of *P. schisticeps* merely in being somewhat more compactly put together. It is made, as are all Scimitar-Babblers' nests, principally of bamboo-leaves, more or less mixed with fern- and bracken-fronds and grass, and lined with the latter. I should, however, remark that the typical nest of *P. schisticeps* is globular or semiglobular, and *not* a shallow saucer like those described by Hume ('Nests and Eggs,' vol. i. p. 81). I must now have taken fully 200 nests of the *Pomatorhini*, and fully three quarters of these have been completely or nearly globular. This Scimitar-Babbler, unlike most of its genus, does *not* place its nest either on or very close to the ground, at all events not often. Many are placed four to five feet up in thick bushes, bamboo-clumps, or other similar suitable places. One I took from a bush was over seven feet from the ground, and two or three others taken from bamboo-clumps were quite as high up.

Three is the most usual complement of eggs, four being seldom laid; they are, of course, pure white, and in texture like others of the genus, and they are fairly glossy. Typically they are blunt elongated ovals, but short ovals occur. The only fifteen eggs I have measured average 1″·15 by 0″·716.

These birds seem to breed only at heights over 3000 feet, and are very early breeders; all my eggs have been taken on or before the 26th May, with the exception of one clutch taken on the 12th July. During this month, however, I found nearly all the young fully fledged, and the three eggs I took were probably a second brood.

The nest is made in bamboo-jungle, bush-scrub, the borders of cultivation, and on the *outskirts* of forests; seldom, I believe, any great distance in their interior.

10. POMATORHINUS MACCLELLANDI. (*Oates*, op. cit. i. p. 125.)

This bird is not uncommon on the eastern ranges of North Cachar, where I have often found its nest. This does not differ at all from that of *P. erythrogenys*, though, probably from being the most handy materials, it is nearly always built mainly of bamboo-leaves and coarse grasses; other materials, such as ferns, roots, &c., being less easy to obtain, are not used to so great an extent. The eggs, three or four in number, are not, I think, typically so long or drawn out as the majority of Pomatorhine eggs. The fourteen I have taken measure 1″·09 by 0″·76, and I think, in addition to being shorter than most eggs of the genus, the shell is perhaps rather stronger and also slightly less glossy. They breed in much the same sort of places as *P. phayrii*, but their nests are always placed on, or almost on, the ground. The favourite place, undoubtedly, seems to be the base of some bamboo-clump, where it is half buried amongst the fallen spathes and leaves; it also prefers to place its nest on sloping ground, and not on ground at all level.

I have taken no nest later than May, and even more eggs are laid in April than in that month, some few being laid in March.

11. Gampsorhynchus rufulus. (*Oates*, op. cit. i. p. 135)

I have but one note on the nidification of this bird. This refers to a nest found about two miles from Gungong, taken from a bamboo-clump growing beside a road, at about six feet from the ground. It was a massive semiglobular affair, much like many nests of the *Pomatorhini*, made of bamboo-leaves and lined with fern-roots, narrow strips of ekra-bark, and grass. It contained four young, and the egg of this bird I have never yet seen. The Cacharis inform me that it more nearly approximates to the eggs of the genus *Trochalopterum* (the marked type) than any of this subfamily, but of course not much reliance can be placed on what the natives assert.

This Babbler sometimes breeds in immature plumage, as the male bird of this nest was in the semirufous stage, and I do not think the complete adult stage is always attained before the second autumn.

12. Pellorneum palustre. (*Oates*, op. cit. i. p. 143.)

I have found this bird breeding in the extensive grass-lands to the north of the subdivision. The nest cannot be distinguished from those of *P. ruficeps* and *P. mandellii*, but it is more often placed on grass-land than in any other situation, seldom, if ever, in the bamboo- and bush-jungle so much affected by those birds. The eggs only differ in being somewhat smaller, averaging about 0″·87 by 0″·64.

13. Pellorneum ignotum. (*Oates*, op. cit. i. p. 144.)

This is one of the most common birds to the north-east and east of the North Cachar Hills, breeding everywhere above 3000 feet in great numbers. The nest is of the same character as that of *P. mandellii*, i. e. a rather massive structure, composed principally of bamboo-leaves and grasses, and lined either with grass or, very rarely, with bamboo- and fern-roots. It is decidedly a neater nest than that built by any other *Pellorneum*, and is also rather more compact and well put together. I have seen one or two nests built of very fine shreds of bamboo-grass exceedingly well intertwined and neatly finished off; so much so, indeed, that at first sight I have mistaken them for the nests of *Uroloncha acuticauda*. In most nests the entrance is rather close to the top, about one inch to two inches below the roof; in others it is somewhere near the middle; whilst in a few it is quite close to the bottom, merely sufficiently removed from it to prevent the loss of the contents. The situation selected for the nest is not, as is the almost invariable rule with other birds of this genus, one on the ground, but generally in some thick bamboo-clump or else in a thick tangle of plants and creepers. The favourite place is the former, undoubtedly; the position chosen being somewhere between two and four feet from the ground, seldom more and seldom less, in a thick cluster of twigs or amongst the clump of bamboo itself. In number the eggs are three or four, most commonly the former, and I have on two occasions met with only two eggs incubated.

The most common type has the ground-colour a rather bright, decided pink, profusely covered over the whole surface with rather dark brownish-red speckles and dots, which frequently form a well-defined ring about the larger end, sometimes a blurred cap, but this is never so distinctly defined as is the ring.

Some eggs are much paler, not unlike those of *Iole icterica*, but more blurred and less boldly marked; others, again, have the ground-colour almost white, so that the markings show up far more than they would otherwise do. In some few eggs the markings are confined to the larger end, forming there a ring or cap.

One clutch in my collection has the whole of the markings blurred and .ndistinct, running one into another and merging into the ground-colour. The shape of the egg is wonderfully constant, abnormal eggs not existing, so far as my experience goes. They are regular, rather broad ovals, very slightly, if at all, compressed towards either end, and though in a few they are slightly lengthened, still they are always blunt. The two most lengthened clutches I have are also the only two in which the markings are *entirely* confined to the larger end, but though the markings might be termed abnormal, at least in their distribution, the eggs are not sufficiently long or pointed in shape to be so called. The shell, though thin, and therefore fragile, is close and firm in texture, showing a fair amount of gloss.

Ninety-two eggs vary between 0″·72 and 0″·90 in length, and in breadth only between 0″·57 and 0″·62; the average of the same number being 0″·78 by 0″·60. It is curious that, whilst the variations in length cover 0″·18, the variations in extreme breadth should be only 0″·5. Of the total 92 eggs measured, only six exceed 0″·84, and only seven were less than 0″·75 in length, so that, omitting these 13 eggs, the remaining 79 varied but 0″·9 in their extremes of length.

The earliest date I have recorded on which I have taken eggs is the 20th of April, 1893, and the latest is the 29th of July of the same year.

14. **Drymocataphus tickelli.** (*Oates*, op. cit. i. p. 146.)

The eggs of this bird are recorded in Hume's 'Nests and Eggs,' but as I have now no hesitation in stating that Bingham must have been in error when he assigned the eggs found by him to this species, I include it in the list I am now preparing.

On some fifteen occasions I have taken the nest, obtaining either the male or female bird at the same time; a dozen times I have had it trapped, and thrice I have shot one either on the nest or close to it. This, the nest, is, as might be expected, much like that of a *Pellorneum*, being made of bamboo-leaves and soft sun-grass, but having a more or less large amount of dead leaves, fern-fronds, and other similar material woven in with the others. In shape it is more often a deep cup, or a cup with one side prolonged and bent over, than is the nest of any *Pellorneum*, though cup-shaped ones are not rare even amongst birds of that genus. Perhaps also, on the whole, it is more compact than that of a *Pellorneum*, the materials being more welded together, damper, and heavier. Two nests out of three will be taken from off the ground itself, but others are placed low down in bamboo-clumps, thick bushes, or other similar situations. One I once found was in a damp mass of weeds, caladiums, and creeping-raspberries, placed about 18 inches from the ground, and, whilst well hidden from view on three sides, was plainly visible from the fourth side, where a track ran down the steep hill, leading from a camping-ground to a small stream. The bird, though so shy, is a close sitter, and does not leave the nest until the finder has come very close; but when it does leave it seems to become at once invisible, gliding away noiselessly into the nearest cover thick enough to conceal it.

The series of eggs I have taken show practically no variation in shape or in colour and character of their markings. The ground-colour is a pale greenish grey, varying very slightly in intensity and but little in hue, though some few may be rather more decidedly green than grey, and *vice versâ*. In *all* the markings consist of very numerous freckles and small irregular blotches of pale reddish brown, distributed, as a rule, almost equally over the whole surface, but in a good many forming a very indistinct cap or ring. Besides the superior marks there are inferior or underlying ones, ranging in tint from the very palest bluish grey to a rather warm purplish grey. The eggs they most closely resemble are dark, dull, but profusely blotched eggs of *Copsychus saularis* and *Cittocincla macrura*. In shape and texture they are very much like the eggs of *Pellorneum ignotum*, just described, but the surface is rather dull; only in one clutch is the very faintest gloss perceptible.

Twenty-seven eggs average 0″·81 × 0″·61, the longest and the broadest measuring 0″·88 × 0″·66 respectively, whilst the shortest and narrowest are 0″·77 × 0″·58. The earliest eggs taken were found on the 29th of April, 1890, and the latest on the 18th of July, 1893. The eggs are either three or four in number, occasionally only two.

15. Corythocichla striata. (*Oates*, op. cit. i. p. 148.)

The nest of this bird is a deep massive cup, one side much prolonged and slightly overhanging the egg-cavity, the structure in one or two cases being almost semi-domed. The materials consist chiefly of dead leaves and fern-fronds bound together with coarse fern- and moss-roots; in one or two nests I have seen a few broad grass-blades and bamboo-leaves mixed in with the rest, and in one or two also I have seen weed-stems used for binding purposes, together with the fern-roots. The lining is merely a neat mass of dead leaves. The most striking thing about the nest is its invariable very dark colour, no materials except such as are damp and semi-rotten being used, even such few scraps of grass and bamboo-leaves as are selected being disdained unless they have acquired a dirty reddish-brown tinge. It is always, I believe, placed on, or practically on, the ground. One nest I found at the foot of a railway-survey pillar, wedged in between two of the large stones which formed its base, and concealed by rank weeds and grass. Another was taken from the decomposed mass of vegetation lying at the foot of a large tree, scanty weeds growing round it and helping to screen it from view, though its dark dirty-looking aspect agreed so well with the rotten stuff on which it rested, that additional concealment was scarcely necessary.

Other nests I have taken from amongst moss and living bright-green bushes, &c., and in all cases these have been most carefully hidden, as otherwise the dark tint of the nest, contrasting with its surroundings, would have at once attracted attention. From their position and construction the nests bear but little handling, though when actually *in situ* they seem well enough put together.

I think four is the full and general complement of eggs laid, though I have taken one clutch of three and another of two, both of which were partly incubated. On another occasion I took a nest which contained two half-fledged young. The eggs are white, marked with small spots and freckles of pinky red and pinky brown, none very deep and none very pale; the secondary markings are of pale pinkish purple, larger than the primary markings. These, as well as the subordinate spots and blotches, are rather sparingly scattered over the whole egg, rather more numerous towards the large end than elsewhere, where also they sometimes form a ring or cap, but always indistinct and very roughly defined. In shape the eggs are broad ovals, very slightly compressed towards the smaller end, which is very blunt.

Fourteen eggs average 0″·81 by 0″·6. The largest egg is 0″·83 by 0″·62, and the smallest 0″·78 by 0″·59. The surface is close, fine, and hard, and shows a decided gloss.

16. STACHYRHIS ASSIMILIS. (*Oates*, op. cit. i. p. 163.)

There is practically nothing to note in the nidification of this little bird different from that of *S. chrysæa.*

It builds a nest shaped either like a very deep cup, semi-domed or completely so, in the same way as do other birds of the genera *Stachyrhis* and *Stachyrhidopsis*. When placed under shelter sufficiently complete to entirely cover the nest the cup-shaped sort is built, and one sixth of the nests will be found of this shape, about one third of the semi-domed type, and the remaining half fully domed. The majority of the nests I have taken have been found resting either actually or very nearly on the ground, sometimes placed amongst a lot of damp close-growing plants, sometimes at the foot of some bush or at the base of a bamboo-clump. Others are placed in shrubs, generally in low bushy ones, or at some height from the ground in a bamboo-bush or clump. Wherever placed the materials seem to be always the same, viz. bamboo-leaves, either entire or in shreds. Sometimes, but by no means invariably, there is a scanty lining of fine shreds of leaves or fine grasses.

The following are the measurements of three nests, one of each type:—

Completely domed.—Height 4″·8, diameter 2″·9. Internal diameter about 2″ by rather more than 2″·5 in height. Entrance about 1″·2.

A semi-domed nest, that is to say, one shaped like an egg from which half the small end has been removed.—Height over 5″, diameter about 2″·7 outwardly, and about 1″·8 inwardly. Cavity 2″ deep from the edge of the outer wall.

A cup-shaped nest measured externally 3″·2 by 2″·1 in diameter, and internally 2″·1 in depth by 1″·6 in width at the top.

The nest is generally rather well made, the bamboo-leaves being well matted together, but, from its very nature, it can stand little handling, and the bird also seems peculiarly fond of building it in some damp position, which increases its tendency to rot and come to pieces. I have found it both in thin evergreen-forest and in bamboo-jungle; in the former sort of ground it is generally placed by a pathway or on the borders of an open piece of ground.

The number of eggs laid varies greatly. I have once taken two hard-set eggs, and have also taken five eggs from a nest; probably the number is normally three or four, frequently the former number.

In shape the eggs are rather regular broad ovals, rarely somewhat pointed at the smaller end; they are very smooth and glossy, and fine and stout in texture, far stronger than the eggs of *Stachyrhidopsis.* They measure from 0″·59 to 0″·67 in length, and from 0″·44 to 0″·50 in breadth, the average of 22 eggs being 0″·61 by 0″·48. Oates seems much struck by the smallness of the eggs of *S. chrysæa* found by Gammie, and of which he remarks :—" Their cubic contents are not half those of the average eggs of *S. nigriceps.*" These eggs measured 0″·63 × 0″·48, whereas the average of forty eggs of this bird measured by myself is only 0″·62 × 0″·46. Oates does not seem to consider that the cubic contents of the two birds are probably just about in proportion to the size of their eggs.

17. STACHYRHIDOPSIS RUFIFRONS. (*Oates,* op. cit. i. p. 165.)

I have seen but six nests of this species; of these three were globular and three were in shape like an egg placed on its larger end with the extremity cut off in a rather slanting direction. All the nests were made of shreds of sun-grass; two entirely, the others more or less mixed with scraps of bamboo-leaves, one being, in fact, half formed of this material. Three nests were lined with fine grasses, two with fine grasses and bamboo-roots mixed, and one with a fine fibrous-looking material, which I think consists of strips of the bark of fine bamboo-roots. In size the nests vary from about 5″ to 6″ in height, and are rather over 4″ in diameter; the diameter of the cavity is a little over 2″, the depth being more than half as much again.

The first nest was brought to me by a Cachari, together with the male bird, which he had trapped on it. On being questioned he said he found it in a clump of bamboos, standing in mixed bamboo- and bush-jungle. Two nests taken by myself were both found in thick masses of twigs on the outside of bamboo-clumps, one about four feet from the ground, the other about six. A third was taken from low down in a very dense bush little over two feet high. It was quite covered by the thick clusters of leaves and extremely well hidden, whereas those in the bamboo-clumps were rather conspicuous.

The eggs differ in no respect from those of *S. ruficeps*, except that as a whole they are slightly duller. In shape they are broad, very obtuse ovals, the shell fine and close, but glossless, and decidedly fragile. In colour they are white, sparsely speckled and spotted with yellowish and reddish brown, and with a few secondary small blotches of pale lavender. In one clutch the marks are scattered all over the egg, being rather more numerous at the larger end, to which, in all the other eggs, they are almost entirely confined, forming a fairly well-marked ring. Ten eggs average 0″·64 × 0″·53, and vary very little in size, the extremes in length being 0″·62 and 0″·65, and in breadth 0″·50 and 0″·55.

They are early breeders, April being the principal month for eggs. I have taken none later than May.

18. SCHŒNIPARUS MANDELLII. (*Oates*, op. cit. i. p. 169.)

To describe the nest of this Tit-Babbler would be merely to repeat the description already given of that of *Corythocichla striata* (see above p. 57), it differing only in being a little smaller and proportionately more bulky and stoutly built. It also stands a good deal more rough usage, and will sometimes keep its form and shape for some months after its removal. It is placed either on or very close to the ground, the bird choosing much the same kind of ground as does *Corythocichla striata*, and appearing to be equally careful in rendering its nest invisible to prying eyes. A few of my nests have been taken in patches of grass or ekra, placed amongst the roots, almost on the ground. This sort of ground is, I believe, never used for nesting purposes by *C. striata*, bush-, tree-, and bamboo-jungle forming their haunts.

The eggs are of a type unlike those of any other genus in the family, and are very like those of *S. dubius* described in 'Nests and Eggs.' Some clutches have the ground-colour a very pale creamy brown, spotted and blotched with rather rich vandyke-brown, and with a few twisted hair-like lines and streaks of the same, but darker, sometimes almost black; there are also numerous pale cloudy blotches of pale brown, often surrounding the darker markings as with a nimbus. These marks are equally and rather profusely scattered all over the egg. The secondary spots are of pale lavender, almost entirely confined to a ring at the larger end, and a very few of dark neutral tint dotted here and there, but mostly about the ring. Other eggs are very much like these, but have a very decided greenish tinge, both in the ground-colour and in the blotches, these last also being often very dense and at the same time blurred and ill-defined. Other eggs, again, have the ground-colour white or nearly so, tinged with brown or grey; and, in some specimens, the subordinate lavender markings are equally numerous or scanty, as the case may be, over the whole surface of the egg.

The eggs are normally very regular ovals, hardly at all compressed towards the smaller end, and I have found only two clutches of the long drawn-out type, which would appear to be the common form of *S. dubius*. The texture is fine and close, and the shell strong, often showing a slight gloss. Thirty eggs average rather under 0″·83 by 0″·61, varying in length between 0″·78 and 0″·87, and in breadth between 0″·58 and 0″·62.

These birds breed in deep valleys at a height of over 2000 feet, and I have also taken two nests on or near the Hungrum range at an elevation of over 5000 feet. Four is the normal complete number of eggs, but I have more than once taken two eggs hard-set. They lay in the latter end of April, and eggs may be taken well on into July, the 21st of that month being the latest I have found any.

19. SITTIPARUS CINEREUS. (*Oates*, op. cit. i. p. 171.)

The nest of this little Tit-Babbler is very like that of *Schœniparus*, but is generally composed chiefly of bamboo-leaves, and is sometimes domed. Three nests taken in July 1893 were all shaped differently, and show well the different forms to be met with, as well as the materials used in construction. One was a very deep cup about 4″ deep by 2″·5 in diameter externally, the cavity measuring about 2″·5 deep by 1″·5 across at the widest part, and about 1″·2 at the top, where the materials were drawn closer together by the weeds and roots used to bind them. The whole of the nest was of bamboo-leaves and fern-fronds, all dry and dark-coloured, bound together with fern-roots and weed-stems, and lined with very fine shreds of grass and a few fine fern-roots.

The second nest was like the common form, already described, of *Schœniparus*, but the side which was prolonged was more bulky, and even more brought forward and downward, so that the nest was almost more than semi-domed. The materials employed were much the same as in the last, but no fern-roots were used in the lining. This nest measured about 5″ in height by about 3″ in breadth, and internally the diameter was 1″·8, the entrance being 1″·2, and in the narrowest part the same as the diameter lower down. The third nest was completely domed, but otherwise differed in construction from the other two merely in having no grass in the lining, this being made of fern- and moss-roots only. It measured 5″·2 high by 2″·8 broad, the inner diameter about 1″·7.

Many nests have the dark, damp appearance of the nests of *Schœniparus*, but others are quite light-coloured, the bamboo-leaves being of the usual yellow colour, and not in a damp, rotten stage of decomposition. They are generally placed in bamboo-clumps either low down or some two or three feet from the ground in the thick bunches of twigs which grow out of the first few nodes. In 1891, however, I took two nests in evergreen-forest which were both placed in amongst the roots of a quantity of plants, though not resting actually on the ground itself. The dark colour of these nests was very noticeable. The eggs vary very much in coloration. One clutch of them in my collection has the ground-colour a very pale stone, and is marked rather profusely throughout, and especially so at the larger end, with small blotches of pale sienna-brown, there being faint indications of a cap in one egg, and, equally faint, of a ring in another. A second clutch differs in having nearly all the blotches confined to the larger end, where they form very distinct rings, and where also they are mixed with a few specks and blotches of brown, so dark as to appear almost black. A third has a white ground, with a dense ring of very dark brown and pale sienna specks and blotches, which are sparse everywhere else. Underlying the ring, but very plainly visible, are a few spots of dark neutral tint. Yet a fourth clutch differs in having no underlying marks at all and the specks of brown still darker, whilst the sienna ones are almost wanting. In shape most of the eggs are rather long ovals, somewhat compressed, though blunt, towards the smaller end; but others, again, are very broad, not at all compressed, and one clutch is both broad and also pointed at the small end.

Ten eggs vary in length between 0″·68 and 0″·73, and in breadth between 0″·49 × 0″·57. The average of the same number is under 0″·71 by over 0″·52. I have taken eggs hard-set as late as the 25th of July, and a single fresh one as late as the 13th of the same month; on the other hand, I have taken eggs very hard-set as early as the 29th of April. This is a rare bird, except in one or two favoured localities; in these it is very common. It does not appear to breed below 2500 feet, and ascends for this purpose up to 5000 feet.

[To be continued.]

V.—*Notes on the Birds of the Central Pyrenees.*

By H. M. WALLIS.

THE following observations were made in May and June 1894, in the district east of Pau and Eaux-Chaudes and west of Luchon and Bagnères-de-Bigorre. A week was spent on the Spanish side of the range in the glens at the foot of Pic Perdu, and the rest of the time was passed on the French frontier. I carried no gun.

1. TURDUS MUSICUS, Linn.

I heard the Song-Thrush at Eaux-Bonnes, and again in the Valle de Ara * on the Spanish side, where in the late afternoons it sang cheerily among the pine-woods.

2. TURDUS MERULA, Linn.

The Blackbird was noticeable at Eaux-Bonnes and as far up the Gave-de-Pau as St. Sauveur. At Argelès-de-Bigorre I found a nest with five eggs.

3. TURDUS TORQUATUS, Linn.

I met with Ring-Ouzels at the edge of the timber-line above Gavarnie. Young birds were on the wing by June 16th.

4. TURDUS PILARIS, Linn.

We came upon a single Fieldfare on June 6th in a copse of stunted beeches near the edge of the timber-line above Gavarnie, *i. e.* about 5700 feet above sea-level.

The bird flew over my companion's head, uttering its alarm-note—a call with which he had become fairly familiar during a six weeks' tour in Norway in the nesting-season. He called to me and began hunting for a nest, almost immediately finding one in the fork of a gnarled beech about 4 feet from the ground. This nest agreed precisely with some hundreds of Fieldfares' nests which he and I found in Norway, though placed lower than most. Had I found it at home I should have thought it an unusually low-placed nest of a Missel-Thrush though that bird occasionally builds as low and lower. It was empty, but ready for eggs. On revisiting this nest a week later we found its lining pulled out, apparently the misdeed of Jays which were nesting near. We saw no more of the Fieldfare. A second nest, like the first in position and materials, but a year older, was in the same copse; both nests were of the materials and architecture usual with the Fieldfare (and Missel-Thrush), very weighty and solidly constructed.

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* Also known as Valle de Ordesa and Val d'Arazas. - H. M. W.

The only other species of *Turdus* seen in the district (not near these nests) was the Ring-Ouzel. I fear that I have left the question as to Fieldfares breeding in the Pyrenees where it stood before.

5. MONTICOLA SAXATILIS (Linn.).

A male Rock-Thrush in full plumage observed on St. Savin above Gavarnie on June 17th. There is a difference in the habits of this and the Blue Rock-Thrush which I cannot remember having seen noticed by anyone but Mr. Seebohm, *i. e.* in their manner of singing. *M. cyanus*, I think, invariably sings seated; he will fly round, "checking" like a a cock Blackbird, for half an hour in the sunset before roosting, but for what may be called his song he selects the highest pinnacle handy. The song of *M. saxatilis*, on the other hand, is sometimes delivered on the wing, the artist flying to and fro in short undulating turns along the face of some wooded cliff (such as St. Salvador at Lugano), pouring out a continuous and varied song of great beauty. Under such circumstances, passing and repassing close beneath one's eyes, he is indeed a handsome bird.

A clutch of eggs in the collection at Eaux-Bonnes are labelled as taken in the district.

6. CINCLUS AQUATICUS, Bechst.

A Dipper of some sort is common on the mountain-streams on both sides of the frontier. I could never get sufficiently good views to decide whether it was the pale-breasted form or not.

7. Saxicola œnanthe (Linn.).

Wheatears abound in the Pyrenees between the snow-line and timber-line; I found eggs above Gavarnie on June 16th.

On the stony side of the Pic de Gez, above Argelès, I saw some kind of Wheatear which I cannot name; the male was many shades darker than *S. œnanthe,* his back and head being a deep *electric blue.* His mate might have passed for a female of the common species, but showed more russet.

8. Pratincola rubetra (Linn.).

Whinchats haunt the meadows below Arrens, in the Vallée d'Azun, and also at Bagnères-de-Bigorre, where the grassy country they like runs up into the hills. The Pyrenean Whinchat is so brilliantly coloured that to English eyes it hardly seems the same species as our island form.

9. Pratincola rubicola (Linn.).

I saw the Stonechat near Eaux-Bonnes.

10. Ruticilla phœnicurus (Linn.).

A single male Redstart, apparently anxious for the safety of his nest, was flitting about a barn near Arrens on May 28th, about 2800 feet above sea-level.

11. Ruticilla titys (Scop.).

Black Redstarts are abundant among the mountains at all elevations, from the chimney-tops of Argelès and Bagnères-de-Bigorre, which are on low ground, to the snow-line. I saw pairs playing about little rocky outcrops near the Brèche de Roland, and others among the Observatory buildings upon the summit of the Pic du Midi de Bigorre, 9440 feet. We found its nest, sometimes as bulky as a Blackbird's, sometimes half the size, in the most varied situations: on a beam in the roof of a staircase having doors above and below; in the wall of a milking-hut; inside a herd-boy's shelter; and on ledges left by the blasting charges along the high road.

12. Erithacus rubecula (Linn.).

I found the Robin nesting at Argelès-Vieuzac and met with it at Eaux-Bonnes. In the wildest forests of the Valle de Ara its cheery little song reminded one of home; but the bird has not, in the Pyrenees, the friendly habits of the English resident species; it rather shuns human neighbourhood, as one finds it doing in the Bernese Oberland, and resigns to the Black Redstart the place of pensioner and house-mate.

13. Daulias luscinia (Linn.).

Nightingales were in full song in the gardens of Argelès-Vieuzac on May 29th. We did not hear them among the mountains nor on the Spanish side until we reached Torla, a little town several miles south of the frontier.

14. Sylvia rufa, Bodd.

I met with the Whitethroat at Argelès-Vieuzac on May 28th.

15. Sylvia atricapilla (Linn.).

The Blackcap was singing at Eaux-Bonnes in the last week of May, and we heard and saw it daily among the box-bushes on the Spanish side in June.

16. Sylvia salicaria (Linn.).

Garden Warblers were singing at Argelès-Vieuzac. I could not feel sure of either Chiffchaff or Willow Warbler in the Pyrenees. Some lively little birds were abundant in the Valle de Ara which puzzled me by constantly commencing with the cry of the one species and tailing off into the song of the other.

Some other birds, the Chaffinch for example, have Spanish notes very different from their usual English call.

17. Regulus ignicapillus (C. L. Brehm).

On May 26th I found Firecrests feeding young at Eaux-Bonnes; the nest seemed similar to a Goldcrest's, and was hung in a conifer close above a public lamp beside the main road. Firecrests were nowhere common. The Goldcrest I did not see, nor was there a skin in the Eaux-Bonnes collection.

18. **Accentor collaris** (Scop.).

The Alpine Accentor is a rather common bird among the loftier Pyrenees, if one goes high enough; I think it prefers the main chain to outlying spurs, even of considerable height. I met with it upon the snow at the Port de Gavarnie, and watched it picking crumbs close to the men's feet at the Observatory upon the Pic du Midi de Bigorre, where it probably was nesting, for it left some hole, which I could not identify, in the loosely-built retaining-wall of the southern terrace. This was on June 21st. I believe a pair were nesting at the top of the Col de Allanz, S.W. of Gavarnie, 8255 feet. Near the summit of Salarou, on the Spanish side, the behaviour of a pair led me to their nest. It was empty, though ready for eggs, and was placed in a crevice into which one's hand passed with difficulty. Superficially it resembled a rather bulky nest of a Hedge-Sparrow, but I could see no green moss about it.

This bird sings better, has more of a voice, and is in every way a finer bird than the next species. When seen close at hand it discovers chestnut flanks and more beautiful feathering than some of its portraits credit it with. Unlike most Pyrenean birds it is rather tame, allowing one to approach it more nearly than the Snow-Finch usually will, or the Water-Pipit. At the Brèche de Tuquerouye (8775 feet) the Alpine Accentors seemed very much at home, although everything save vertical cliffs was under snow.

19. **Accentor modularis** (Linn.).

We saw the Hedge Sparrow at Eaux-Bonnes, but lost sight of it among the higher valleys on the French side, to find it hatching a nestful of eggs among the box-bushes of the Valle de Ara, between 3000 and 4000 feet above sea-level.

20. **Acredula irbyi**, Sharpe & Dresser.

21. **Acredula rosea** (Blyth).

Some long-tailed Tits with greyish, almost white scapulars, were playing among the trees near the railway-station at

Pau; others, indistinguishable from our form, showing next to no white on the head, I met with at Argelès-Vieuzac.

22. Parus major, Linn.

23. Parus ater, Linn.

24. Parus cæruleus, Linn.

Our three common Tits were present in the wooded regions. The Great Tit at Eaux-Bonnes, the Cole Tit at St. Sauveur, and both in the Valle de Ara. The Blue Tit we did not notice across the frontier; we found it nesting at Argelès and St. Sauveur.

25. Parus cristatus, Linn.

Fairly common among the tall pines and spruces of the Valle de Ara and the yew trees above Bucharo. Surely the Crested and Cole Tits are more nearly akin than the other species. They are much given to hunting in company, and in a dusky pine-wood or in thick weather they are not easily distinguished.

26. Sitta cæsia, Wolf.

One could frequently hear and sometimes see the Nuthatches among the tall timber around Eaux-Bonnes and in the Valle de Ara.

27. Certhia familiaris, Linn.

The Creeper was seen at St. Sauveur and in the hotel garden at St. Bagnères-de-Bigorre.

28. Tichodroma muraria (Linn.).

The only Wall-Creeper we saw was at the upper end of the Valle de Ara, say 6500 feet. It was well described to me by others who knew the district, so I suppose it is not uncommon.

29. Troglodytes parvulus, Koch.

One could hear Wrens singing at all hours of the day among the woods at Eaux-Bonnes and in the Valle de Ara.

30. Motacilla alba, Linn.

I saw the White Wagtail, which is not essentially a mountain bird, as far up the Gave-de-Pau as St. Sauveur, say 2525 feet.

31. Motacilla melanope, Pall.

The Grey Wagtail is the bird of the mountains, and I find "*ubique*" marked against this species on my list. It is particularly fond of waterfalls and narrow inaccessible glens and "races." A pair had a nest over the fall at the back of my hotel at St. Sauveur; the visits of the male began and ended only with daylight; he would send his call-note before him as he came undulating over the house-tops, and was so full of energy that once in a dozen journeys he must needs recreate himself with dancing a kind of aerial "breakdown," towering vertically in successive leaps with abundant action of the tail, singing the while with considerable execution.

32. Anthus trivialis, Linn.

A single Tree-Pipit was singing in a tree beside the road between Larruns and Eaux-Bonnes on May 26th, but we saw this species nowhere else. The Meadow-Pipit escaped me altogether.

33. Anthus spipoletta, Linn.

The Water-Pipit is the common Pipit of these mountains, and one hears and sees it everywhere upon the bare grassy uplands beyond the forest-line. I have watched pairs running upon the snow far from any herbage. On June 14th and 16th eggs were found, much incubated, above Gavarnie, at an elevation of not less than 6000 feet, and a third on June 21st on a southern spur of the Pic du Midi de Bigorre, at about the same elevation. These nests, placed, like those of a Meadow-Pipit, in a hollow beneath a tussock of grass overhanging a path or watercourse, were entered by small mousehole-like apertures, the outer wall of the nest being formed of coarse grasses, of which the knotted roots, with pellets of earth adhering, were cunningly left exposed. These nests would be impossible to find if the parent birds would sit close. My eggs vary in size and colouring within much the same limits as those of the Rock-Pipit from Donegal, but have a stronger ink-mark. I could not tell them from

Rock-Pipit's eggs. The birds at the nest are wary and vociferous.

34. Lanius collurio, Linn.

A male Red-backed Shrike was seen at Gèdre, in the Gave de Gavarnie, on June 4th, 3265 feet.

35. Lanius pomeranus, Sparrm.

On May 31st a male Woodchat in fine plumage dropped out of a thorn-bush upon some insect in the road below St. Sauveur and retreated with a beetle into thick covert; 2300 feet. On June 7th we saw a second in a spinney of box below Bucharo, on the Spanish side; say 4200 feet.

36. Muscicapa grisola, Linn.

The only Spotted Flycatchers I recognized were at Bagnères-de-Bigorre on June 24th among the trees of the riverside boulevard, 1800 feet above sea-level.

37. Hirundo rustica, Linn.

The only Swallows we saw were at Arrens, in the Vallée d'Azun, on May 28th, about 2800 feet above sea-level.

38. Chelidon urbica (Linn.).

On May 28th a little cloud of House-Martins were enjoying the sunrise among the cliffs at the upper end of Vallée Valentin, above Eaux-Bonnes (3600 feet). Next day we saw more at Argelès-Vieuzac, and met with the species again in company with the Crag-Martin at the extreme end of Valle de Ara, under the Pic Perdu, about 7000 feet. To what height will the species go? I remember coming upon a row of nests under an overhanging cornice whilst climbing (unsuccessfully) for an Eagle's nest, far above the forest-line, in the Dovréfjeld. Between St. Sauveur and Gèdre, in the precipitous glen leading to Gavarnie, a numerous colony of House-Martins breed, especially using the spaces between stone corbels supporting string-courses on the new bridges.

39. Cotile rupestris (Scop.).

I saw Crag-Martins playing around the Pic de Bergons, 6700 feet, on June 1st, and observed them later at Gavarnie. We found them nesting under unapproachable cornices at various points along the Valle de Ara in Spain, from 7000 to 7500 feet above sea-level.

40. CARDUELIS ELEGANS, Steph.

We met with the Goldfinch at Arrens in the pleasant Vallée d'Azun (2800 feet) on May 28th, and again at Argelès-Vieuzac.

41. CHRYSOMITRIS CITRINELLA (Linn.).

In the Valle de Ara in early June a pair of Citril Finches were our daily visitors, occasionally perching upon the gable or upon the hurdles of the sheep-fold, and permitting one to approach within seven or eight yards while they picked dandelions to pieces close to the door of our hut; the male constantly uttering his thin metallic chirrup, like the chink of small silver coins. They seemed to be nesting close at hand, and were the only sociable species in the valley; Robins, Thrushes, and Wrens alike keeping to impenetrable cover.

42. SERINUS HORTULANUS, Koch.

On May 26th I found a Serin sitting upon three eggs in a conifer beside the highroad near Eaux-Bonnes. This nest is very small and flat, was placed some 15 feet from the ground upon the fork of a horizontal limb, was quite invisible from below, and at one yard's distance seemed only a chance accumulation of needles. The outer wall is of dry roots; the cup is of horse- and cow-hair, with two Woodcock feathers. The eggs resemble a Goldfinch's, but are smaller. When first found the hen was sitting; she left the eggs at the call of her mate, who summoned her to be fed with a prolonged delicate trill. When I ascended the tree an hour later he was sitting, and sat very close. I mention these details as I found the nest very difficult to discover, although the birds abound in every orchard, square, and garden throughout the Pyrenees, from the hotel grounds at Eaux-Bonnes up to the high timber in the Cirque de Gavarnie at the extreme limit of forest-growth, say 6000 feet, where I found a deserted nest with one egg.

This little bird has some points, probably merely superficial, in common with the Greenfinch—so many, in fact, that it has frequently seemed to me a diminutive congener of ***Ligurinus chloris.*** The distribution of bright colour in the males is similar, some of the call-notes are much alike, and even the wavering, irregular nuptial flight, which I had thought peculiar to the Greenfinch, is precisely reproduced by the male Serin. The nests and eggs, allowing for differences of size, are curiously alike in position and materials, shape and colouring. The cock Serin is the most invisible of any bird I know; he can sit between two green leaves, himself seeming a third, and sing for five minutes whilst you vainly try to distinguish him with the binoculars.

43. LIGURINUS CHLORIS (Linn.).

I saw a Greenfinch in the hotel garden at Bagnères-de-Luchon (2065 feet), and nowhere else throughout the Pyrenees.

44. MONTIFRINGILLA NIVALIS (Linn.).

One may count upon Snow-Finches among outcrops of splintered rock above the snow-line. At the watershed of the Port de Gavarnie, on the Pic Perdu, among the rocks at the Col de Allanz, and on the summit of the Pic du Midi de Bigorre I enjoyed a dozen opportunities of watching this hardy little bird. Nothing in its behaviour pointed to nesting having begun on June 21st. Though pretty generally distributed among the higher Pyrenees, it seems a less successful species there than at certain places in the Bernese Oberland, where one may watch flocks of a hundred wheeling, twittering, and performing aerial evolutions more like Dunlins than Finches. The men at the Observatory upon the Pic du Midi assured me that the ***Pinson de neige*** did not nest until July.

A Rock-Sparrow is in the collection at Eaux-Bonnes; the skin is neither named, dated, nor localized, but I may as well mention it, as all the skins there that are named seem to have been locally obtained, except perhaps the Black Grouse, and that may be found there also for aught I know.

45. PASSER DOMESTICUS (Linn.).

The House-Sparrow was in evidence at the village of Arrens (2800 feet). We saw it nowhere else.

46. FRINGILLA CŒLEBS, Linn.

The Chaffinch is one of the commonest—perhaps the commonest—bird of the Pyrenees. I noticed it among the beech-forests at Eaux-Bonnes and Barèges and in the pine-woods of the Valle de Ara. Throughout these mountains it uses certain very distinct call-notes which I never heard in England. On June 3rd I found a nest ready for eggs in one of the lateral glens (about 4000 feet) above St. Sauveur.

47. LINOTA CANNABINA (Linn.).

Only at Eaux-Bonnes was I sure of the Linnet; there upon the furzy hillside to the north of the hamlet we found its nest and hard-set eggs on May 27th. In the Eaux-Bonnes collection are a pair of small dull-coloured Linnets (without names, dates, or localities), having faint yellow rumps, but otherwise resembling Twites.

In the same collection are Bramblings in winter-plumage.

48. PYRRHULA EUROPÆA, Vieill.

At Eaux-Bonnes and Argelès-Vieuzac we saw the Bullfinch. At St. Sauveur, where three fourths of the hotels had not opened by June 1st, and things were consequently quiet, the Bullfinches were hunting the *Escallonia*-bushes set in their tubs on the side-walk before the *salle-à-manger*, a diversion more suited to the London Sparrow than to this wary bird.

49. EMBERIZA MILIARIA, Linn.

The Corn-Bunting was seen around Argelès-Vieuzac, 1525 feet.

50. EMBERIZA CITRINELLA, Linn.

The Yellow-Hammer takes the place of the Sparrow as street-scavenger at Eaux-Bonnes. Whether the Sparrow comes up with the crowd when the season opens I cannot say, but until the end of May *E. citrinella* and the Chaffinch had no competitors. We saw this species throughout the

French Pyrenees at all moderate elevations, but missed it among the wooded glens on the Spanish side.

51. Emberiza cia, Linn.

Common in the hedgerows around Eaux-Bonnes. We lost sight of it on leaving the cultivated parts of the valley, and did not recognize it at Argelès-Vieuzac or elsewhere. This bird is very like the last species in its habits, and its appearance on the wing or when perching suggests a case of partial albinism in a Yellow Bunting, the yellow of the head and neck being replaced by dirty white, but the note is quite distinct.

52. Alauda arborea, Linn.

On June 7th I saw a Wood-Lark among rocks and snow at the summit of the Port de Gavarnie, 7485 feet.

53. Alauda arvensis, Linn.

On May 28th a single Sky-Lark was soaring above the grassy downs near the Col de Saucède, about 5000 feet. I do not think this species can be common in the Central Pyrenees, for neither on the sheepwalks above and below Eaux-Bonnes, nor in the meadows around Argelès-Vieuzac, nor on the grassland about Torla, on the Spanish side, did we see or hear it.

54. Pyrrhocorax graculus (Linn.).

55. Pyrrhocorax alpinus (Koch).

We saw Red-billed Choughs on both sides of the frontier. The well-known colony near St. Sauveur is still numerous, and, I should think, likely to remain so. There are about 20 nests placed in inaccessible crevices in the sides of a narrow wooded gorge. All are below the level of the road, which winds along towards Gavarnie. The mountain-walls seem almost to meet overhead; the swift river, hundreds of feet below, fills the whole bottom of the cañon, which seems only a gunshot in width. The sheer cliff-sides of the gorge were hung with clematis and radiant with the wonderfully rich flora of the Pyrenees, *Ramonda* blooming in every crevice. The birds, secure in their unapproachable fastness, were somewhat confiding, and as playful and adroit as Choughs always are, descending the narrowest part of the abyss with one headlong plunge from the upper regions over our heads, a dozen at a time, like a shower of meteorites. There is another colony in a similar situation at the lower end of the gorge just above Pierrefitte. On the Spanish side I found the Red-billed Chough abundant among the astonishing cliffs of the Valle de Ara. I did not find the spot or spots where they breed, which is not surprising when one reflects upon the 10 miles of cliffs which this and the adjoining valley can show, seldom less than 1000 feet, and frequently 3000 feet high, and abounding with every kind of cleft, cranny, and cavern.

The Alpine Chough is, for some reason, much commoner in the Pyrenees than the Red-billed species, which it overlaps both in range and elevation. We found it in the Vallée Valentin near Eaux-Bonnes and at the Col de Torte, at Argelès and St. Sauveur, and the whole length of the Gave-de-Pau and its tributary glens up to the Cirque de Gavarnie. A colony in the cliffs of the Brèche de Roland (9500 feet) was very vociferous, and when upon the summit of the Pic Perdu (11,000 feet) I heard this bird crying overhead in the cloud. There is a colony on the Pic du Midi de Bigorre. It seemed equally common on the Spanish side; mixed flocks of the two species were seen daily in the Valle de Ara and elsewhere. I noticed no racial antagonisms.

Whilst upon a rough mountain-side above Gavarnie we saw a Hawk or Falcon (perhaps male Peregrine) pursue and clutch an Alpine Chough and descend with extended wings, parachute-wise, gripping its shrieking prey. The aggressor was so nearly the same size as his victim that we had thought the affair a romp of a pair of Choughs until the final grip.

Whilst hunting for beetles I have had Choughs similarly engaged walking within about twenty yards of me. They are wary birds, but very inquisitive; at the Wengern Alp Hotel last year one entered the *salon* by one window, made the tour of the room, perched upon the book-case, and left by the other window, squawking.

56. Garrulus glandarius (Linn.).

The Jay is common everywhere on the French side from the forests of the foot-hills to the last stunted beech-scrub below the snows of Gavarnie, where we took fresh eggs on June 6th within a few yards of the timber-line (5600 feet). I cannot recall seeing it across the frontier, nor can my companions.

57. Pica rustica (Scop.).

The same remarks apply to the Magpie. We found young birds on the wing early in June on the rocks above Gavarnie (5100 feet). We have no recollection of it on the Spanish side.

58. Corvus corone, Linn.

Carrion-Crows were feeding young birds in an inaccessible nest in the wooded gorge above Eaux-Bonnes on May 25th. We also saw Crows at St. Sauveur and in Valle de Ara, but nowhere observed Hooded Crows or the hybrid birds which are so common in Tyrol.

59. Corvus corax, Linn.

I did not find "les grands corbeaux des montagnes" common in the Central Pyrenees. We recognized them at Eaux-Bonnes, at St. Sauveur, and on the Pic du Midi de Bigorre, where they were misbehaving themselves sadly. Because the Griffons would not allow them a cut in at a dead sheep they wantonly annoyed a fine Imperial Eagle, who had apparently eaten all he could carry and only wanted to be let alone. The Ravens attacked him out of pure wantonness, driving the magnificent old fellow from one seat to another, until a plucky little Peregrine, who, not caring for high mutton, took up the case on public grounds and beat off the Ravens as nuisances. Indeed, he would take no denial, and could have thrashed half a dozen, as I once saw a single Peregrine do near the Lizard. Up, up he went, light as a rising bubble, turned over and stooped upon the nearest Raven with the rush of a cricket-ball. After two or three near brushes the aggressors made off complaining. *Aquila adalberti* settled on the bare ground and resumed his interrupted siesta.

60. Cypselus apus (Linn.).

Swifts were wheeling above Argelès-Vieuzac late in May. We lost them on entering the narrow gorge above Pierrefitte, missed them at St. Sauveur and Luz and Gavarnie, but found them again over the quaint tiled roofs of Torla, a dozen miles on the Spanish side.

61. Cypselus melba (Linn.).

The absence of Swifts of either species among the mountains on the French side surprised me. Such noticeable birds could hardly be overlooked, for during the last week in May and the first three in June I was daily among cliffs which seemed suited to them, but, whatever the weather, none were there. Even the astonishing pinnacles and minarets of creviced limestone in the Valle de Ara were untenanted, save the Salarou, around the dizzy summit of which a pair of Alpine Swifts where wheeling, with their nesting-hole a thousand feet below. From the woods beneath it seemed near the top; from the top it appeared in the basement; it would be difficult to visit. The pair seemed unused to visitors and swept in narrow rings around my head, like rushing bullets.

Among the Common Swifts circling above Torla church I noticed a pair of *C. melba*.

62. Caprimulgus europæus, Linn.

I saw a Nightjar at St. Sauveur, and another in Valle de Ara, about 5000 feet.

63. Picus martius, Linn.

I had never the luck to see the Great Black Woodpecker, although I suspected its neighbourhood from seeing how roughly some of the timber in the Valle de Ara had been handled. The morning I left the valley I noticed a noble spruce perforated by rectangular holes, much too large for any other European Woodpecker, supposing other species to cut square holes.

64. Gecinus viridis (Linn.).

We saw Green Woodpeckers near Argelès-Vieuzac and elsewhere on the French side. The cry of some Woodpecker in the Valle de Ara was very like the note of this species, but I could get no view of the birds.

65. Cuculus canorus, Linn.

The Cuckoo is common on both sides of the central range up to the timber-line.

66. Gyps fulvus (Gmel.).

The Griffon is *the* Vulture of the Central Pyrenees, but I do not think it is much in evidence among the foot-hills and forests, though I fancy that it would turn up quickly enough if carrion in any quantity were exposed. When, from some cause or other—a landslip, I fancy,—about a dozen goats perished in the Valle de Brada this spring, the "Aigles" came in force to the funeral, a native estimating their number at about 70, and a week later I saw no reason to doubt the truth of his account.

West of Gavarnie a glen runs up under the cliffs of Sécugnac, which are very lofty and steep; the last 300 feet overhanging. In these cliffs are sundry vertical fissures, which I was assured were breeding-places of "les Vautours;" and my informant, Célestin Passet, a well-known guide and *chasseur*, is a very "straight" man, though not a naturalist. We twice saw a pair of Griffons circling about this cliff, sometimes following the ins and outs of its face at the level of the fissures, at another time wheeling between us and the foliage below, and displaying the snow-white ruff. I think I saw a pair in the Valle de Ara, and at a fissured cliff above Bucharo, just inside the Spanish frontier, and am sure of others upon the Pic du Midi de Bigorre; but by far the best view I ever enjoyed of large birds of prey was among the foot-hills of the central range at the head of the Val Campan on June 21st. The grassy valley was full of sheep just arrived from the lowlands, a dozen flocks of different breeds and marks, all bleating and weary, with dogs and shepherds at their heels. Something or other had died, and over the carrion a lively dispute was going on. A Spanish Imperial Eagle, three or four Bearded Vultures, a pair of Ravens, and about a dozen Griffons were gobbling, scuffling, leaving, arriving—such a scene! The great birds that only a minute before had been slowly describing circles in the blue vault overhead, as small as dor-beetles, came dropping down by twos and threes until the little green patch around the carcass seemed paved with drab backs; each new arrival folding its wide wings and changing instantly from the most graceful to the most awkward of creatures.

Griffon etiquette seemed to prescribe that one should feed for, say, three minutes, whilst the rest awaited their turns, sitting around humped in attitudes of attention. The order of the feast was disturbed by the inrush of a great white *chien de montagne*, looking like a bleached St. Bernard, before the onset of which the birds rose as lightly as a puff of feathers, timing their departure to a nicety. When the dog retired the original party, strengthened by new arrivals, settled hurriedly to make up for lost time, and manners went to the winds. Two Griffons would fight and scuttle around one after another at the run or with ungainly hopping, assisted by half-open wings, cuffing and dodging. Whilst this went on the Ravens got a beak in, only to be instantly flapped off by the four-foot-long pinion like a flail. It was like a fowl-run at feeding-time, and meanwhile, close over the heads of the mob of Griffons, the Bearded Vultures were drifting in little figures of eight, buoyant as floating gossamers, sometimes taking a wider turn and kissing and caressing on the wing. I think these were all young birds, with dark brown heads and necks. Their coarse dull plumage reflects no sunlight, and by contrast the Griffon's upper parts looked white.

One could hardly have had a better opportunity for comparing the shapes and actions of the two species. The Griffon sails but seldom flaps; his immensely broad square-cut wings are set forward at the same angle as an Eagle's or Buzzard's, *i. e.* a line drawn from tip to tip would pass clear of the beak to the eye of an observer directly beneath. The wings seem almost as flat and as rigid as the sails of a mill and bounded by the same right lines. So deep are the secondaries that the short square-cut tail projects but little, hardly breaking the line of the wings as the bird wheels.

If the Griffon superficially recalls the Buzzard, the Bearded Vulture reminds one sometimes of a Kite, and again of a Gull. His tail is racquet-shaped, but its length and mobility, and above all the soft easy half-stroke of the wings, the rise and fall, momentary check, hover and pass on, are all very Kite-like. So is the set of the wings, which droop from the shoulder, and are not thrust stiffly forward like a Griffon's. A line drawn from tip to tip would not clear the head to a watcher from below, but would pass at once through the roots of the primaries and behind the undulating lines of the fore edge of the wings. A Griffon draws his head and neck back into his ruff whilst on the wing. A series of attempts to sketch a Griffon soaring recall, when most successful, the sign-royal of Rameses carved on some of the Nile temples.

67. NEOPHRON PERCNOPTERUS (Linn.).

I saw a pair of Egyptian Vultures near Gavarnie on June 6th. One of them, when attacked by a Peregrine, tumbled almost like a Pigeon. A week later another pair were wheeling over Torla. At the Brèche de Roland, 9500 feet, I watched a solitary bird crossing into Spain, flying before the wind at a speed one more readily associates with a hungry Swift than with this leisurely little scavenger. No doubt he had just received information of a dead cat in some hamlet on the Spanish side.

By the white wedge-shaped tail this bird is easily recognized on the wing. I had expected to find it common on the frontier, but our French guides did not know it, either by the name of *Vautour* or *Pélican*.

68. GYPAËTUS BARBATUS (Linn.).

The Bearded Vulture is known to the Pyrenean guides as the *Gypäète*. Célestin Passet killed one near Gavarnie last winter, but our men knew of no place, even by tradition, where it bred in the Hautes Pyrénées. I have already mentioned this bird.

69. BUTEO VULGARIS, Leach.

The Buzzard is common among the wooded foot-hills; one sees them from the château at Pau and at Eaux-Bonnes.

In the cañon between Larruns and Eaux-Chaudes at least two pairs had nests. One crossed the glen over my head carrying something heavy and large; his tail was clapped down tight over it as he worked across to his ledge with short laboured strokes of wing. After crossing the Col de Torte we identified no more Buzzards, but I think some birds seen from the train near Bagnères-de-Luchon belonged to this species.

70. Aquila adalberti, L. Brehm.

Determining the species of an Eagle on the wing is ticklish work, and the field-naturalist's heart warms towards any bird that is at the pains to wear distinctive plumage.

Twice we saw a dark-coloured Eagle splashed with white. Once in the Valle de Ara, whilst following up fresh ibex-tracks among the cliffs, one of these pied Eagles flapped past and was hailed as an "Impérial" by Passet. The other occasion I have already enlarged upon. This bird was many miles on the French side of the frontier. There was a dumb-bell-shaped white patch on the underside of each wing, the rump or root of the tail showed a large expanse of white, whilst the shoulder and fore-edge of the wings were splashed. Our guides said the "Impérial" bred upon the Pic Rouge de Pailla, just inside the French frontier*.

71. Aquila chrysaëtus (Linn.).

Twice between St. Sauveur and Gavarnie we saw brown Eagles, with yellow or tawny napes, and no white markings. These were like the Scotch Golden Eagle in flight, colours, and apparently in size. The style of country was just what the Scotch Eagle likes—lightly wooded crags, heather, and but little snow, none permanent.

We met a shepherd-lad who had taken eaglets from the nest on the Pic de Bergons last year.

72. Accipiter nisus (Linn.).

I find I have marked the Sparrow-Hawk as "common," but have only noted Eaux-Bonnes and St. Sauveur as localities.

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* [In Spain it nests in trees.—*H. Saunders*.]

In a chemist's window at Argelès-Vieuzac I saw a stuffed Goshawk.

73. Milvus migrans (Bodd.).

Kites were watching the river below Larruns and arriving from Spain by way of Eaux-Chaudes, nine in a string, flying high. This was May 26th. I believe they were Black Kites, although one of those flapping low over the water was rather too large and too red for *M. migrans*. A pair of unquestionable Black Kites haunted the Pic de Gez above Argelès in company with Ravens and Kestrels. They robbed the farmer below of his chickens.

What may be considered the normal range northward of the Black Kite?* I have seen them fishing on the Rhine at Mainz, and in May 1891 one was beating slowly along the tide's edge close to Mont St. Michel.

74. Falco æsalon, Tunstall.

On June 7th a solitary Merlin was hunting the broken rocks cropping out through the snow at the watershed of the Port de Gavarnie on the look-out for the Snow-Finches and Water-Pipits.

75. Falco peregrinus, Tunstall.

The birds which I have mentioned as having been seen killing an Alpine Chough, stooping upon Ravens and Egyptian Vultures, were what I should have called Peregrines in England; but the question of species is complicated in the Pyrenees, I understand, by the occasional presence and breeding of some hitherto unidentified Falcon.

I myself saw on the wing over the housetops of Toulouse a Falcon which puzzled me; it was neither Kestrel, Hobby, nor Merlin, was of the make and carriage of a male Peregrine, but seemed a size too small.

There is a stuffed Hobby in the Museum at Eaux-Bonnes.

I have seen plenty of true Peregrines (stuffed) in the

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* [Finland and Archangel. Several have been obtained in Normandy. —*H. Saunders.*]

Pyrenees, there can be no reasonable doubt, but in the extreme Eastern Pyrenees there is another large Falcon.

76. Falco tinnunculus, Linn.

I saw Kestrels, apparently breeding, at the château at Pau, others in the cañon on the way to Eaux-Chaudes, others at Argelès and on the Spanish side in Valle de Ara. The species seemed generally distributed, but not common, *i. e.* I should have seen five times as many in the same time spent in the open air in Berkshire, and literally a hundred times the number on the heathery ridges near Gibraltar, where Kestrels are as common as the Sky-Lark is in England. Why Kestrels do not abound in the Pyrenees I cannot imagine, the supply of dor-beetles, grasshoppers, small snakes, and lizards is inexhaustible, and nesting-ledges are abundant enough in all conscience, but the fact remains that one can walk for days without seeing a Hawk of any kind.

I do not consider that this brief list comprises all the species of Raptors one might reasonably expect to see during a passing visit to the Central Pyrenees. In the thick timber of the Valle de Ara I heard the loud clucking of some large bird of prey: said my guide, "That's the one that takes the other birds"—information which I found confirmatory, but insufficient. On another occasion, at the edge of the timber in the Cirque de Gavarnie, I came upon the scene of a recent scuffle, and the ground was strewn with tail- and wing-feathers, which Dr. R. B. Sharpe identifies as those of a young Honey-Buzzard.

77. Columba palumbus, Linn.

A few Ring-Doves remain to breed in the pine-forest of the Valle de Ara. Whilst working through thick scrub one gets a momentary glimpse of grey back and banded tail, or, just before the chill of sunset begins, one hears the clap of a wing, a bird sails out over the tree-tops, claps again, and at the summons he is joined by five or six others in a "constitutional" down the valley and back again. I know not what enemy keeps down the natural increase of this species in a forest which, were it in England, would support its thousands of Wood-Pigeons.

78. Caccabis rufa (Linn.).

The only time I saw Red-legged Partridge was whilst scrambling over fallen rock in a barren desolate glen at the back of Pic Buderans, say 6000 feet up. A pair of, I think, Bearded Vultures had just passed along the cliff overhead, amidst the silence of all bird-life, and when the glen was relieved of them I caught the chuckling call-note—reminiscent of Suffolk stubbles—from a tumbled scree close at hand. Out came the cock from his crevice, stood erect, stretched his neck and called again, was answered by his mate from some other crevice, and both, spreading their red tails, took wing with a whir.

79. Lagopus mutus (Montin).

A couple of Ptarmigan were burrowing into the edge of the drift upon the top of Pic de Bergons, say 6790 feet, on June 1st. I saw droppings upon the snow elsewhere.

The Capercaillie I did not see. One evening at St. Sauveur I met a heavily-armed young fellow on his way to the pine-forest above Pragnères. He explained his system: he would reach the pines after sunset, lie awake until in the dusk before sunrise he heard "chanter le Coq de bruyère," whereupon he would, &c. As a matter of fact he returned empty-handed, and I was told "que le Coq de bruyère ne chantait pas tous les jours."

VI.—*Additional Notes on Tunisian Birds.*

By Joseph I. S. Whitaker, F.Z.S.*

Having this year made another trip in the Regency, and added some interesting specimens to my collection of Tunisian birds, I think it desirable that I should supplement my previous paper with a few more field-notes, and with a list of the species obtained by me this year other than those included in my former list.

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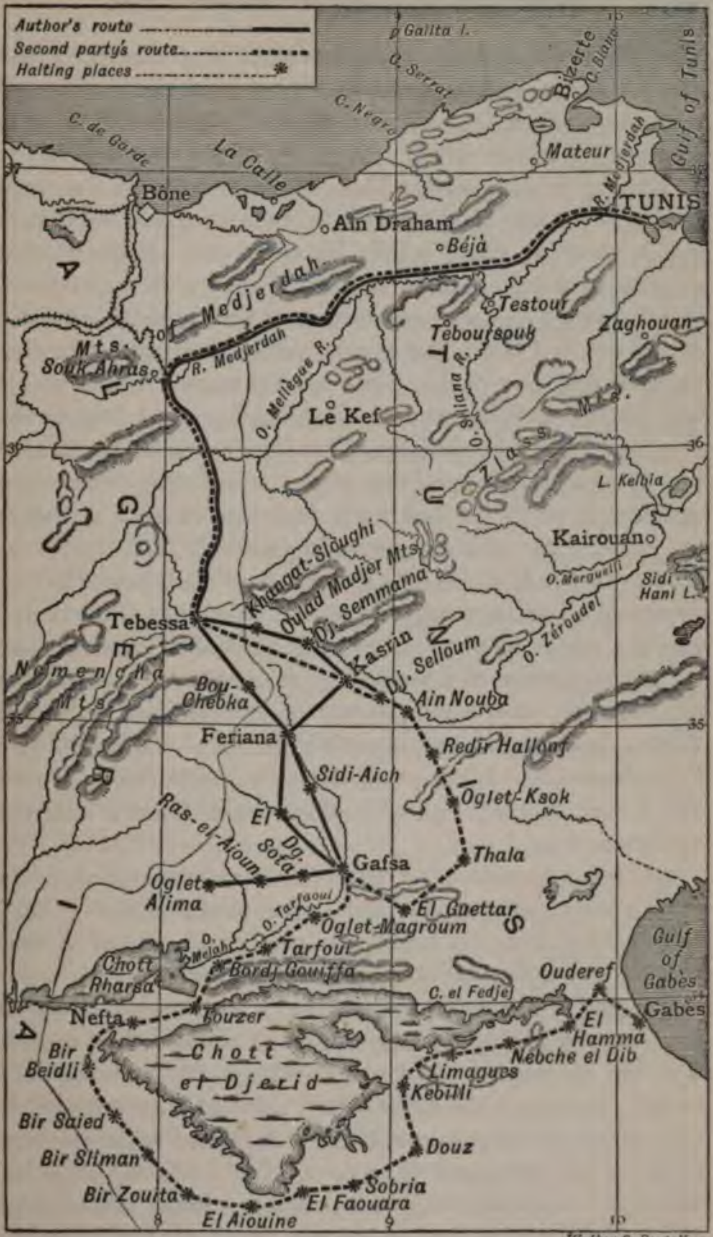
* For former notes see 'Ibis,' 1894, p. 78.

I had intended on this occasion making a more extended journey, visiting the Algerian Sahara first, and then entering the Tunisian territory from the S.W.; indeed, I had already started on this expedition, and was two days' journey beyond Biskra, when a sad loss in my family circle recalled me home. The season being far advanced when I was able to make a fresh start, I finally decided to confine my travels to the country I had already visited last year. I would, however, here mention that I had previously despatched a second party, in charge of a friend, to explore the country immediately south of the Chott Djerid, partly with a view to bird-collecting, although I regret to say the result of their efforts in this particular respect was somewhat disappointing, owing, perhaps, to the counter-attractions of bigger game.

The route I myself took being so nearly that followed by me last year, I propose giving merely a brief outline of my present journey, avoiding, so far as may be possible, any repetition of my previous experiences.

Starting from Tunis on the 24th March, I reached Tebessa the same evening, spent the following day in making up my caravan, and left again on the 26th for Feriana by the southern road *viâ* Bou-Chebka. Here we experienced very cold stormy weather, and were among the clouds the greater part of one day. This was not to be wondered at, perhaps, considering we were at an altitude of over 4000 feet. The cold at night was intense on these high plateaux, ice forming on the pools round our tents. The neighbourhood of Bou-Chebka is a charming park-like country, with woods of Aleppo-pine; and further on among the hills, before descending to Feriana, the scenery is decidedly grand and imposing. Owing to the bad weather, we did not reach Feriana till the 29th March. *En route* from Tebessa we met with the following birds worthy of note, viz.:—*Turdus viscivorus*, *Monticola cyanus*, *Ruticilla moussieri*, *Sylvia subalpina*, *Fringilla spodiogena*, *Loxia curvirostra*, *Corvus tingitanus*, and *Columba palumbus*, besides the ubiquitous Barbary Partridge.

At Feriana I was obliged to discharge my Algerian camel- and mule-drivers, and engage a fresh lot of Tunisians. As a



Walker & Boutall sc.

MAP OF TUNIS AND EASTERN ALGERIA.

rule, the Tunisian Arabs are quieter and less pretentious than the Algerians, and without that veneer of civilization and education which is sufficient to spoil, but insufficient to improve the native mind.

Leaving Feriana on the 31st March, *en route* for Gafsa, we took a new road, lately opened, to the west of Sidi-Aich, near which place we made a halt last year, and encamped that evening at Saharidj, close to the ruins of a Roman cistern. The following morning we started for Gafsa, which place we finally reached late in the evening, after a long and somewhat eventful day, one of our party having managed to lose his way in the morning and not turning up until late in the evening. He, however, atoned for the anxiety he had caused me by producing a specimen of the rare Lark, *Chersophilus margaritæ*, which he had been fortunate enough to secure *en route*. The country between Saharidj and Gafsa was particularly rich in bird-life, the abundant winter rains having produced a luxuriant vegetation and filled the streams and rivulets, which, as a rule, are dry in these districts. Besides the above-mentioned *Chersophilus margaritæ*, I secured specimens of *Saxicola aurita*, *Sylvia conspicillata*, *Argya fulva*, *Lanius dealbatus*, and of six other species of Larks. I may here observe that I was particularly fortunate this year with the Larks, getting examples of eleven or twelve different species in all.

At Gafsa, according to previous arrangement, I met my second party, just returned from the south of the Chott Djerid, and received from my friends an interesting account of their journey and doings since we parted company.

The 2nd of April was ushered in by a storm exceeding in intensity any previously experienced in Gafsa—at least, such was the opinion of the "oldest inhabitant." It certainly entirely shattered the belief I had previously entertained in the almost complete immunity from rain that these southern districts are supposed to enjoy. The following day, the weather being fairly fine, we spent some hours in the Gafsa oasis, obtaining a few specimens of small birds, chiefly Warblers and Finches, and devoted the remainder of the day to sight-seeing in the town and preparing for our next journey. I availed myself of this opportunity to search for nests of the House-Bunting (*Emberiza saharæ*) in the Gafsa Mosque, which seems to be a favourite breeding-haunt of these little birds; but although I found several, some of them apparently almost completely finished, none had eggs in them. The nest of this species is a delicate structure composed of fine bents, neatly interwoven, and lightly lined with wool or hair, and is always placed in some crevice in a wall. The males were now in full song.

On the 4th April we all left Gafsa, I and my party travelling westward towards Oglet Alima, thence to return to Gafsa, and then to proceed northwards to Kasrin; while my second party went in an easterly direction to Thala, thence to travel north, and meet me again at Kasrin. On the evening of the 4th April, after a very hot journey across the Gafsa plain, we camped at the foot of the Djebel Sota, and the following morning left again for Ras-el-Aioun. Just before starting I had the good luck to secure specimens of the White-rumped Swift (*Cypselus affinis*). At Ras-el-Aioun we pitched our tents close to the Oued Seldja, which this year had plenty of water in it after the late rains. The storms must have been indeed heavy about here, to judge from the many uprooted tamarisk-trees and bushes we saw in midstream or deposited on the sand-spits, showing that the river must have gone considerably out of its course. The tamarisks are particularly fine about here, and evidently of great age. In the centre of a clump of these, a most picturesque spot, we noticed two crosses lately erected to the memory of some French soldiers who had died here last autumn, probably on the march from Gafsa to some western outpost. Passing by the Col de Seldja, a remarkable gorge through which the river of that name flows on its way to join the more important Oued Melah, we reached the neighbourhood of Oglet Alima about sunset. I had hoped to have found the Coronetted Sand-Grouse (*Pterocles coronatus*) again here, the spot where I found it last year, but was disappointed, not a single example of the species being visible during the two days that I spent in the neighbourhood. I should think this was probably owing to the fact of water being plentiful further south, for, as I observed in my previous paper, the present species seemed merely to visit this locality for drinking purposes, its usual habitat no doubt being somewhat further south.

I may, perhaps, here mention that when at Biskra in the early part of March, and within a day's journey of that place, I saw some flocks of Sand-Grouse, which seemed very like *P. coronatus.* They may, however, have been *P. senegalus,* which species is not uncommon in that district.

Near Oglet Alima I obtained specimens of *Scotocerca saharæ, Saxicola mœsta, Pterocles arenarius,* and a few other species, but I did not find so many birds here as I did last year, when I was a month earlier, many of them having no doubt gone north. *Saxicola mœsta,* however, was extremely plentiful here, and indeed throughout the country that I visited west of Gafsa, although nowhere else. I found several young birds of this species, some of which must have been quite six weeks old. They were scarcely distinguishable from the old birds, when flying, showing that the bird is an early breeder. I found no nests, although I tried several holes, into which I had seen the birds disappear. It seems, however, to be a favourite habit with this species to enter the rat and jerboa holes, with which the southern plains abound, in search of the insects to be found there. I noticed that this Chat sometimes utters its song when in the act of flying.

On the 8th April, after having given our Arabs a holiday, wound up by a hearty feast on roast lamb, to celebrate the close of the Ramadan fast, we retraced our steps eastward, camping that night about halfway between Ras-el-Aioun and Djebel Sota, and the following day we re-entered Gafsa before sundown.

The weather, which during the past few days had been fine and very hot, now changed again, and we came in for a regular gale from the N.W. Evidently we were destined this year to experience the extremes of climatic vicissitudes! However, we spent the next day quietly at Gafsa, allowing the gale to blow itself out, and on the 11th April we started for the North, camping that evening near Sidi-Aich, and reaching Feriana the following day. At Feriana I found all the spring migrants in full force, and added a few specimens to my collection, after which we started for Kasrin.

Soon after our departure, and almost in the identical spot where I met with the species last year, I spied a pair of Great Bustards (*Otis tarda*); but although I attempted a careful stalk, I could not get within shot of the birds. Reaching Kasrin rather late in the evening, we were not sorry to find my second party already arrived and busy preparing for us. After dinner I arranged that my friends should leave early the following morning for the Djebel Selloum, in search of Barbary Wild Sheep, which they accordingly did, while I remained a day at Kasrin, wishing to secure specimens of *Corvus tingitanus* and *Sturnus unicolor*, both of which species seemed fairly plentiful about here. The ravines and rocky clefts in this neighbourhood were full of birds, mostly Rock-Doves (*Columba livia*) and Kestrels, both *Falco tinnunculus* and *F. cenchris*, no doubt breeding.

On the 15th April I joined my friends at Djebel Selloum, and remained there till the 18th, when I left for Djebel Semmama, on the return road to Tebessa, my friends having been obliged to leave a day earlier, as they wished to reach Tunis before the 20th April.

At Djebel Semmama I spent three days, and, notwithstanding very adverse weather, added several specimens to my collection, mostly of spring migrants. These abounded in the tamarisk and oleander bushes bordering the Oued Hattoub, which flows to the west of the mountain.

On the 22nd April we moved our camp to Khangat-Sloughi, halfway between Djebel Semmama and Tebessa. An important Roman town, or settlement must once have existed here, to judge from the ruins covering the ground in every direction, although I do not find it marked in any of my maps.

On the 24th we resumed our return journey, and passing the Algerio-Tunisian frontier at El Oubira, arrived at Tebessa in good time. The weather was now lovely, and the country through which we passed beautifully fresh and green, after the late rains. Countless Rollers and Bee-eaters, resplendent in the bright sunshine, accompanied us throughout the day, while the pine-woods resounded with the merry song of the Chaffinch and other small birds, welcoming the advent of spring. Our journey, however, was over, and leaving Tebessa early the following morning, we got back to Tunis by midnight. The next day I spent at Hamman-Lif, near Tunis, collecting a few specimens, and on the 27th April I bid adieu to that town, and left for Sicily.

In the accompanying list of birds I have included a few species obtained by me near Tunis itself, and others collected for me, during my absence in the south, by my taxidermist, M. Blanc's assistant, whom I commissioned to visit the Tunis market daily in search of specimens for me.

List of Birds.

1. TURDUS VISCIVORUS.

I obtained specimens of the Mistle-Thrush at the end of March, and again towards the end of April, in the pine-woods to the north of Feriana, where this species no doubt breeds. It is, however, not common in the Regency.

2. MONTICOLA SAXATILIS.

I met with the Rock-Thrush towards the end of April near Kasrin.

3. MONTICOLA CYANUS.

I found the Blue Rock-Thrush also in the neighbourhood of Kasrin and near Tebessa. It is common, and breeds in all the mountainous parts of the Regency.

4. SAXICOLA ŒNANTHE.

Plentiful throughout my journey.

5. SAXICOLA AURITA. (B. M. Cat. B. v. p. 394.)

I met with the Black-eared Chat constantly during my journey this year, both singly and in pairs. This species seems to be much commoner in the Regency than the following one.

6. Saxicola stapazina.

I met with the Russet Chat occasionally during my late journey, and more particularly towards the end of it, or after the middle of April. Last year, when in the Regency, and earlier in the season, I obtained a specimen of *S. melanoleuca*, with the broad black throat-band, so that it would appear that both forms occur in Tunis.

This degree of longitude, broadly speaking, seems to be the meeting-point of the eastern and western forms. In Italy, Prof. Giglioli tells me, both forms occur in the neighbourhood of Florence, which lies pretty nearly in the same degree of longitude as Tunis, *S. melanoleuca* becoming rarer as one goes west, and *S. stapazina* as one goes east, the former indeed being unrecorded from Genoa and the western Riviera, while the latter is unrecorded from Bari and the extreme east of the Peninsula.

In talking of these two Chats, it would perhaps be more correct to call them *species*, as they really seem sufficiently distinct to be separated. Besides the disparity in the breadth of the black throat-band, I notice the following differences between the two, viz. :—

a. On the forehead in *S. stapazina* the black marking does not extend over and completely round the top of the culmen as it does in *S. melanoleuca*.

b. The scapulars in the former are *light*, or cream-coloured, while in the latter they are *dark*, or jet-black.

c. The *inside* of the wings in *S. stapazina* is very much lighter in colour than in *S. melanoleuca*.

In length of wing, and size generally, I find no differences between the two. The tail-marking varies so much in individuals of the same species that one can scarcely attach much, if any, importance to any difference in this respect between the two species, and the fact of there being more or less white or black may be merely a question of age.

Although the two forms are, I think, clearly separable, it is not impossible that they may interbreed, and that intermediate forms may occur. In the Florence Natural History Museum, for instance, I have seen a specimen labelled *S. stapazina* ad. ♂, from Genoa, with the *narrow* black throat-band, but with *dark* scapulars, and with the inside of its wings *dark*. As this specimen, however, also possesses a peculiarly marked dark back, I think one would be justified in looking upon it as abnormal, and possibly a hybrid. Besides the opportunity afforded me, through the kindness of Prof. Giglioli, of comparing my specimens with those in the Florence Museum, I have also been able to examine those in the Turati collection at Milan, now being put in order, under the able supervision of Dr. Martorelli.

7. Saxicola lugens. (B. M. Cat. B. v. p. 370.)

I obtained specimens of the Pied Chat this year, both male and female, at Ras-el-Aioun, to the west of Gafsa. This species, however, seems to be rather rare in the Regency, this being the only occasion on which I met with it in Tunisia, although I had previously found it in the Algerian Sahara. It is a shy, retiring bird, evincing a partiality for desolate spots, particularly where there are marl cliffs, in which it no doubt finds suitable nesting-places.

8. Pratincola rubetra.

I found the Whinchat near Tunis and at Feriana.

9. Pratincola rubicola.

The Stonechat I also got at Feriana.

10. Daulias luscinia.

Common at Gafsa and further north.

11. Sylvia cinerea.

The Whitethroat I met with constantly.

12. Sylvia curruca.

The Lesser Whitethroat I also met with, although not so often as the preceding species.

13. Sylvia subalpina. (B. M. Cat. B. v. p. 27.)

I obtained specimens of this Warbler in the pine-woods north of Feriana, but it is not common in the Regency.

14. Sylvia conspicillata. (B. M. Cat. B. v. p. 22.)

The Spectacled Warbler I met with on several occasions, both in the north and south of the Regency. At Hamman-Lif, near Tunis, it is particularly abundant in spring, and breeds in the mimosa bushes of the gardens there.

15. Sylvia melanocephala. (B. M. Cat. B. v. p. 29.)

I found this species near Kasrin, towards the end of April, in pairs and breeding.

16. Sylvia orphea.

Very abundant at Gafsa, and further north.

17. Phylloscopus rufus.

Common at Gafsa and further north.

18. Phylloscopus trochilus.

Also common in the Gafsa oasis.

19. Phylloscopus sibilatrix.

Less common than the preceding two species.

20. Phylloscopus bonelli. (B. M. Cat. B. v. p. 59.)

I met with this species occasionally.

21. Hypolais pallida. (B. M. Cat. B. v. p. 82.)

I obtained specimens of the Olivaceous Warbler in two or three places, after the middle of April.

22. Aëdon galactodes.

This species I also met with only towards the close of my journey, but once the spring passage had set in it was plentiful everywhere. At Hamman-Lif I counted as many as half a dozen, all together on the ground, within a yard or so of each other.

23. Acrocephalus turdoides.

I obtained a specimen of the Great Reed-Warbler on the banks of the Oued Hattoub.

24. Scotocerca saharæ (Loche). (B. M. Cat. B. vii. p. 214.)

This little bird seems to be strictly a desert species, never occurring far north of the Sahara. During my recent journey in Southern Tunisia, I met with it only on the plains to the west of Gafsa, and there but sparingly. In the Algerian Sahara, however, and within a few miles of Biskra, I found it more plentiful, and my friends who visited the country south of the Chott Djerid also met with it constantly. It is a shy, timid little bird, and on the approach of danger hides in the middle of some scrub bush, from which it is not easily dislodged. I generally found it in pairs, and, judging from the condition of specimens obtained in the early part of April, it was then breeding.

25. PARUS ULTRAMARINUS, Bp.

Parus teneriffæ. (B. M. Cat. B. viii. p. 14.)

This Tit was plentiful in many places, and I was somewhat surprised to find it as far south as Gafsa. *P. ledouci* I did not find; I believe it occurs only in the more northern and wooded parts of the Regency.

26. TROGLODYTES PARVULUS.

I found the Common Wren near Tunis.

27. MOTACILLA FLAVA.

Common in many places, and generally in flocks.

28. MOTACILLA VIRIDIS.

Also common, but generally in pairs, or threes and fours.

29. ANTHUS PRATENSIS.

Common both in the north and south.

30. ANTHUS TRIVIALIS.

Also common in many places.

31. ANTHUS CAMPESTRIS.

I obtained specimens at Gafsa, and further north.

32. ORIOLUS GALBULA.

A common spring migrant.

33. LANIUS ALGERIENSIS.

I have specimens of this Shrike from Tunis, where I have shot the bird within a short walk of that town. It is common throughout the north of the Regency, but I have never met with it in the south, where it seems to be entirely replaced by *L. dealbatus*. Its habitat proper is no doubt the Tell region, and I believe it does not occur far, if at all, south of this, where the country becomes less mountainous, and the alfa-plains commence. Specimens of this species from Algeria and Marocco are said to be darker than those from Tunis; but having only a very small series of examples in my collection, I am unable to speak on this point. I believe there is only one recorded instance of the Algerian Shrike having occurred north of the Mediterranean, viz. that of the capture of a bird of this species, under somewhat peculiar circumstances, in July 1892, near Florence (Giglioli, Icon. Avifauna Ital. sp. 80, fasc. 51). The specimen is now in the Florence Museum.

34. Lanius pomeranus.

The Woodchat was plentiful in most of the places we visited, after the commencement of the spring passage. I found it breeding towards the end of April, near Kasrin.

35. Telephonus senegalus. (B. M. Cat. B. viii. p. 124.)

I have a specimen of the Tchagra Shrike obtained near Tunis.

36. Muscicapa grisola.

A common spring migrant.

37. Muscicapa atricapilla.

The Pied Flycatcher is also fairly common.

38. Hirundo rufula.

M. Blanc procured me a specimen of this species, and told me that he receives a few examples of it every year for preparation.

39. Cotile riparia.

Fairly common in the north of Tunis. *C. rupestris,* I believe, is also found in the Regency, but I have not yet met with it myself.

40. Passer italiæ. (B. M. Cat. B. xii. p. 315.)

I include under this heading two specimens, *apparently* of this species, which I obtained during my late journey; but as neither of them has the perfect or typical plumage of *P. italiæ*, as found in Italy in spring, I am not sure of their identity. It is possible they may be hybrids, either between *P. domesticus* and *P. salicicola*, or between *P. domesticus* and *P. italiæ*, most likely the former, one of the specimens showing the dark back of *P. salicicola*. As mentioned in my previous notes, *P. salicicola* is common in the Regency.

41. Passer domesticus.

I obtained specimens of this species at Feriana and other places.

42. Loxia curvirostra.

I obtained specimens of the Common Crossbill, both ♂ and ♀, in the pine-woods north of Feriana, but nowhere else, and do not think it is widely distributed throughout the Regency. I should, however, conclude that it breeds there, as I found the species in pairs at the end of March.

43. Emberiza cia. (B. M. Cat. B. xii. p. 537.)

The Meadow-Bunting I obtained near Tunis.

44. Chersophilus margaritæ (Koenig).

I obtained a single specimen, a male, of this somewhat rare species, which may perhaps be called the Tunisian form of *C. duponti*, near Saharidj, about halfway between Feriana and Gafsa. Dr. Sharpe (Cat. B. xiii. p. 526) has united it to *C. duponti*; but it seems to differ from the Algerian form in the colouring of its plumage, being somewhat paler and more rufous, particularly on the back, which in *C. duponti* has a black-brown shade, entirely absent in *C. margaritæ*. The whitish fringe of the back-feathers is also more pronounced, giving the bird a decided mottled appearance. I have not been able to compare my specimen, and others that I have from Tunis, with the Spanish form of *C. duponti*.

Although the species is no doubt rather a rare one, and specimens of it are not often obtained, I am inclined to think that it is not quite so uncommon as it is generally supposed to be, and that it is owing to the extraordinary capacity the bird has of hiding itself that it escapes notice and is not more often got.

My friend Dr. Abelli, a careful observer, who was travelling with me, and who, in fact, shot the only specimen I obtained of the species, told me at that time that his attention was first attracted to it by a peculiar low whistling note proceeding from a scrubby bush close by, and that it was only after waiting patiently a considerable length of time that he eventually caught sight of the bird and shot it. He then went after what he thought must be the female, which he had heard whistling in answer to her mate, not far off; but although he searched diligently in every direction, he failed to find it. I myself subsequently, on two different occasions, together with my friend, listened to this peculiar whistle, but could not discover whence it proceeded; and I therefore cannot speak conclusively, or affirm positively that it was uttered by a bird of this species, although I have no reason to doubt it was so. The whistle in question is exceedingly soft and melodious, and is composed sometimes of two, at others of three notes, and in an ascending scale. Once heard, it cannot be mistaken. The country whence my specimen came, and where we subsequently heard the whistle, was open plain, covered with wild thyme, always more or less green. On the dry desert-plains further south we never heard the bird, and I believe it does not occur in the extreme south.

No doubt this species is correctly placed in the genus *Chersophilus*, and no longer as *Alæmon*. (See Sharpe, B. M. Cat. B. xiii. p. 525.)

45. ALAUDA CRISTATA THECKLÆ.

Galerita thecklæ, Sharpe, B. M. Cat. B. xiii. p. 633.

I introduce the Crested Lark, although mentioned in my previous list, wishing to observe that I consider the Crested Lark of North Tunis should be referred to *A. thecklæ* (Brehm). I have carefully compared a good series of Tunisian examples with some from the south of Spain, and find them almost identical. They differ from the typical *A. cristata* in the following respects, viz.:—In size they are smaller, and with a shorter bill. In general colouring they are rather darker, and of a grey-brown instead of a uniform brown shade, the back in particular presenting a more mottled appearance, owing to the centre of the feathers being darker and the edgings lighter than in *A. cristata*. The underparts generally are lighter, and with a decided yellowish tinge instead of brownish. The spots on the throat and chest are more numerous and more distinct. The crest-feathers are more pointed. The outer tail-feathers are lighter and more rufous, and all the tail-feathers more or less rufescently fringed at the tips. The ordinary European *A. cristata* may also occur in the north of Tunis in winter-time, although I myself have not met with it.

46. ALAUDA CRISTATA PALLIDA, subsp. nov.

I met with a pale form of Crested Lark this year in the south of Tunis, which I had not found in my previous journey, when I was under the impression that *A. cristata* was entirely replaced in the south by *A. macrorhyncha*. In my late journey, however, I found that this was not quite the case, as *A. cristata* occurs there in a pale form, although not very plentifully, *A. macrorhyncha* being always the commonest Crested Lark of the southern districts.

This pale Crested Lark may perhaps be referred to the sandy-coloured race, which appears to be found in Palestine and Asia Minor (Sharpe, B. M. Cat. B. xiii. p. 621), although I would observe that the South Tunis form does not differ in size from that of the North, and is therefore not *A. magna* (Hume), which is very similar to, if not identical with, *A. macrorhyncha*.

The Crested Larks, it is generally admitted, are extremely difficult to divide, owing to the various forms running into each other so much. Of those occurring in the Tunisian Regency, *A. macrorhyncha* may perhaps reasonably be separated from the others on account of its larger size, and much larger and somewhat differently shaped bill, coupled with the fact of its being found in the same districts as the pale *A. cristata*, although even here we find individuals differing somewhat among themselves, and a considerable variation between the extreme types. As regards the other Crested

Larks to be met with in Tunisia, and which might perhaps, for convenience' sake, be briefly divided into three classes or races, the northern, southern, and desert races, the difference seems to be solely one of plumage-colour, varying according to the natural characteristics of the localities in which the different forms occur. Thus, in the case of the northern form, which inhabits regions where the climate is almost European, with abundant moisture and vegetation, and where the soil and surroundings generally are of a more sombre hue than further south, the general tone of colour is darkish, or a grey-brown. In the southern form, which inhabits districts where the climate is drier, where vegetation is scanty, and the country more arid, we have a lighter or buff shade of colour; while in *A. isabellina*, to be found only in the far south, and in actual proximity of the desert, the plumage is still paler and of an isabelline hue. The transition, or variation in plumage-colour, however, seems to be gradual and uninterrupted, and the impossibility of any delimitation, or of positively fixing the limits of each zone, is apparent, as we should find more difference between individuals of the same zone but extreme opposite limits than between individuals of different zones but adjoining limits; for instance, we should find more difference between a specimen obtained from the extreme north and one obtained from the extreme south of the northern zone, than we should between the latter and one from the extreme north of the southern or adjoining zone. An interesting exception to the general change in plumage-colour between the three forms is noticeable in the tail-feathers, which, with the exception of the centre ones, maintain the same shades of colour throughout the entire transition.

I have examined a good series of all the three forms of which I have spoken, and I am inclined to think that there is quite as much reason to divide the northern and southern races as there is to separate the desert form *A. isabellina*, although perhaps one would not think so at first sight, or when comparing merely extreme types.

Dealing with these three forms of Crested Larks one might perhaps do well to adopt the *trinomial* system, and call them *A. cristata theklæ*, *A. c. pallida*, and *A. c. isabellina*.

47. ALAUDA CRISTATA ISABELLINA (Bp.).

This pale desert form of Crested Lark is only to be found in the extreme south of the Regency, so much so that I myself did not meet with it in the country that I visited, and my specimens were all obtained by my second party, south of the Chott Djerid, viz. at Sobria, El Faoura, Bir-Zouita, and Bir-Sliman. Some of my specimens are remarkably pale.

48. ALAUDA ARVENSIS.

Common throughout the north of Tunisia, and also to be found on the high plateaux, although less plentifully. I have even obtained specimens in the Algerian Sahara, near Biskra, which somewhat surprised me.

49. AMMOMANES CINCTURA (Gould); B. M. Cat. B. xiii. p. 644.

This little Desert-Lark seems to be confined to the extreme south of the Regency, and its range is very limited. I only obtained a few specimens through my friends who went south of the Chott. They found it between El Faoura and Bir-Zouita.

50. CYPSELUS AFFINIS, Gray.

Micropus affinis, Hart. B. M. Cat. B. xvi. p. 453.

This was another interesting addition to my collection this year. I observed the species only on one occasion, viz. near the Djebel Sota, to the west of Gafsa, where I secured three specimens, male and female. I should think it probably breeds there, as I found it both on my outward and return journey, in the same locality. My second party obtained a specimen of this Swift further south, near Sobria. Dr. Koenig mentions having found it on the Djebel Meda, near Gabes (Cab. J. f. O. 1892).

51. CAPRIMULGUS EUROPÆUS.

Common in the north during spring.

52. CAPRIMULGUS ÆGYPTIUS. (B. M. Cat. B. xvi. p. 562.

I obtained a specimen of this species near Gafsa, a remarkably pale example. It is not at all common, I understand, in the Regency.

53. Iÿnx torquilla.

A common spring migrant.

54. Coracias garrula.

Exceedingly plentiful during the spring passage. Rollers and Bee-eaters (*Merops apiaster*) were constantly to be seen after the beginning of April.

55. Strix flammea.

Not uncommon in Tunis and other parts of the Regency in a pale form.

56. Scops giu.

I obtained a specimen of this little Owl at Gafsa, and repeatedly heard the mournful note of this species while in the south. It evinces a great partiality for palm-trees, and might well be called the Palm-Owl.

57. Gyps fulvus.

I obtained a specimen at the Djebel Ressas, near Tunis.

58. Circus cyaneus.

I obtained specimens at Ras-el-Aioun and near Tunis, where it is fairly abundant.

59. Circus macrurus. (B. M. Cat. B. i. p. 67.)

More common than the preceding species.

60. Buteo desertorum.

I have a specimen from the neighbourhood of Tunis.

61. Milvus migrans.

One of the commonest birds in the Regency. I have sometimes counted as many as a score of them together. It is very fearless, and will often swoop down within a few yards of one when hunting for food.

62. Elanus cæruleus.

I have a specimen from Tunis.

63. Falco feldeggi. (B. M. Cat. B. i. p. 389.)

I have two specimens of the Lanner, procured for me by

M. Blanc, who tells me that it is of frequent occurrence and breeds in the Regency.

64. Falco subbuteo.

Fairly common.

65. Pandion haliaëtus.

I have a specimen obtained near Tunis. I am told the species is fairly common in winter.

66. Ardea cinerea.

Common in all the marshes of the north, and on the borders of the Tunis Lake.

67. Ardea ralloides.

Common in the north of the Regency.

68. Ardea minuta.

Common in the north of the Regency.

69. Nycticorax griseus.

Common in the north of the Regency.

70. Botaurus stellaris.

Common in the north of the Regency.

71. Ciconia nigra.

A specimen procured for me by M. Blanc.

72. Tadorna cornuta.

I have a specimen from Tunis.

73. Anas boscas.

Common.

74. Anas angustirostris, Ménétr.

The Marbled Duck, although by no means common in the Regency, is often to be met with, particularly during the spring passage. M. Blanc tells me he obtains specimens every year.

75. Chaulelasmus streperus.

A specimen obtained for me in Tunis.

76. Spatula clypeata.

Common.

77. QUERQUEDULA CRECCA.
Common.

78. QUERQUEDULA CIRCIA.
Common.

79. DAFILA ACUTA.
Common.

80. MARECA PENELOPE.
Common.

81. FULIGULA FERINA.
Common.

82. NYROCA FERRUGINEA.
Common.

83. TURTUR COMMUNIS.
Common during spring passage.

84. PTEROCLES ALCHATA (Linn.).
I obtained only one specimen of this Sand-Grouse, which my friends got, about the middle of March, south of the Chott Djerid. I am told it is very abundant at certain seasons.

85. PTEROCLES SENEGALUS (Linn.).
This species they met with about the end of March at Tarfaoui, to the N.W. of the Chott, and obtained specimens for me.

86. PORZANA MARUETTA.
Specimens obtained for me in Tunis.

87. PORZANA BAILLONI.
Specimens obtained for me in Tunis.

88. GALLINULA CHLOROPUS.
Common.

89. FULICA ATRA.
Common.

90. GRUS COMMUNIS.
Common.

91. ÆGIALITIS CANTIANA.
I obtained specimens in the south.

92. ÆGIALITIS CURONICA.
I obtained specimens in the south.

93. ÆGIALITIS HIATICULA.
I obtained this Ringed Plover near Tunis.

94. HÆMATOPUS OSTRALEGUS.
Common.

Specimens of the following species were obtained for me in Tunis:—

95. PHALAROPUS HYPERBOREUS.
96. GALLINAGO MAJOR.
97. TRINGA ALPINA.
98. TRINGA SUBARQUATA.
99. MACHETES PUGNAX.
100. TOTANUS STAGNATILIS, Bechst.
101. TOTANUS FUSCUS.
102. STERNA ANGLICA.
103. HYDROCHELIDON HYBRIDA.
104. HYDROCHELIDON LEUCOPTERA.
105. LARUS RIDIBUNDUS.
106. LARUS GELASTES, Licht.
107. LARUS CACHINNANS, Pall.
108. PUFFINUS KUHLI (Boie).
109. PODICEPS CRISTATUS.
110. PODICEPS NIGRICOLLIS.

VII.—*On the Birds of the Philippine Islands.*—Part III.* *The Mountains of the Province of Isabella, in the extreme North-east of Luzon.* By W. R. OGILVIE GRANT. *With Field-Notes by* JOHN WHITEHEAD.

(Plates IV. & V.)

MR. WHITEHEAD'S third collection, formed in the Province of Isabella, arrived in London on the 5th of October, and though the number of birds collected was comparatively small—somewhat less than forty—several remarkably interesting forms were included, two being new to science.

Perhaps the most interesting novelty is a second species of my new Timaliine genus *Zosterornis* (Ibis, 1894, p. 510). This species, which I have named *Z. striatus* on account of its striped underparts, though displaying all the generic differences which mark *Z. whiteheadi* (Ibis, 1894, plate xv. fig. 1), at the first glance reminds one strongly of the members of the allied genus *Mixornis* (especially *M. montana*, Sharpe, from Kina Balu) in its general coloration and style of markings, but this resemblance is only superficial.

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* For Part II. see 'The Ibis,' 1894, p. 501.

The other new bird is an Oriole named *Oriolus isabellæ*, of which unfortunately only the female was obtained; but, as may be seen from the full description given below, it can readily be distinguished from the only allied form *O. albiloris*, the type of which was obtained during Mr. Whitehead's second expedition, and described in the volume of 'The Ibis' for 1894 (p. 504). Several specimens of the rare Fruit-Pigeon, *Carpophaga nuchalis*, Cabanis, were obtained, and Mr. Whitehead has now ascertained beyond doubt that the smaller Fruit-Pigeons, *Ptilocolpa griseipectus* and *P. carola*, are respectively the male and female of one and the same species. Another important point has also apparently been settled regarding the little Kingfishers commonly known as *Ceyx cyanipectus* (La Fresnaye) and *C. philippinensis*, Gould. For many years these beautiful birds have been considered as merely sexes of one species, but now a male and female have been sent in the *C. cyanipectus* plumage and a pair in that of *C. philippinensis*. As the sex of all these four specimens was carefully determined by Mr. Whitehead himself, I think there can be no doubt that Gould was perfectly right in describing *C. philippinensis* as distinct.

Mr. Whitehead's start on this third expedition was by no means successful, for the only man who had proved to be a good taxidermist during the previous trip, and who had promised to accompany him again to the mountains of the North-east, was not on board the steamer when it started from Manila, having purposely missed it. A second man who professed to be a good shot and an experienced collector turned out worse than useless, being afraid to fire off his gun and being perfectly incompetent as a taxidermist, so that Mr. Whitehead, having only in addition two comparatively useless boys, was entirely dependent on his own efforts. Having reached the extreme north of the island, he made his way to the mountains on the north-east coast. The country was mostly flat or undulating and covered with coarse grass. When the hills were reached they were found to be almost impossible collecting-grounds, being covered with thick bamboo-growth intermingled with very high trees. Birds were very scarce, and this was the reason that so few specimens were procured. In addition to the birds a few small mammals, including a new bat and a new mouse, were obtained, also some reptiles (among them a new lizard), batrachians, and fishes, while insects, especially beetles, were numerous.

In returning from Isabella Mr. Whitehead rode over the mountains across the middle of North Luzon to Manila, which he reached in eleven days. Immediately on arriving at the capital he was seized with a severe attack of fever and liver-derangement, which kept him in that most unhealthy town for some time; but when I last had news from him he was located on the south-east coast, enjoying excellent health and making a large collection. The day after he wrote (7th September) he was to sail across to the island of Catanduanes in a small boat for a month's collecting. He expected to be again in Manila by the middle of October, when he intended to despatch his collections, which appear from his letters to contain many interesting birds.

PERNIS PTILONORHYNCHUS (Temm.); Grant, Ibis, 1894, p. 503.

An immature male.

ORIOLUS CHINENSIS, Linn.; Grant, Ibis, 1894, p. 407.

A fully adult male.

ORIOLUS ISABELLÆ, Grant, Bull. B. O. C. iv. no. xx. p. ii (1894).

At first glance the adult female which forms the type of this very distinct species might be mistaken for the *Oriolus albiloris*, Grant, described in the last volume of 'The Ibis,' 1894, p. 504. The latter species was also founded on a female specimen, and it is unfortunate that up to the present time Mr. Whitehead has not succeeded in obtaining the male of either species. *O. isabellæ,* though bearing a strong resemblance to *O. albiloris* in general coloration and appearance, may be easily recognized by its larger size, the bill being twice as stout and brownish black instead of dark red; the colour of the lores and chin is bright yellow; the underparts uniform golden yellow, with scarcely any trace ot dark shaft-stripes on the flanks; the outer tail-feathers show no trace of the black subterminal spot characteristic of *O. albiloris*; while the shape of the wing in the two birds is quite different.

♀ *adult.* General colour above dark yellow, slightly tinged with olive, especially on the head and nape; primaries and secondaries brown, margined on both webs with yellow, the innermost secondaries and scapulars entirely dark yellow; lores, narrow superciliary stripes, chin, throat, and rest of the underparts uniform bright yellow, brightest on the belly and under tail-coverts; tail dark brownish yellow, the outer feathers very narrowly tipped with pale yellow.

O. isabellæ ♀. Total length 8·8 inches, wing 4·4, tail 3·6, tarsus 0·95; culmen—length 1·05, width at gape 0·42.

O. albiloris ♀ (type). Total length 7·7 inches, wing 4·3, tail 2·9, tarsus 0·85; culmen—length 0·85, width at gape 0·3.

O. isabellæ. 4th primary longest; 2nd = 10th; and the 1st about ½ the length of the 2nd.

O. albiloris. 4th primary longest; 2nd = 7th; and the 1st about ½ the length of the 2nd.

PERICROCOTUS NOVUS, Wardlaw Ramsay, Ibis, 1886, p. 161.

Pericrocotus, sp. inc., Grant, Ibis, 1894, p. 505.

In the second collection made by Mr. Whitehead in the district of Benguet there was an adult male *Pericrocotus,* most nearly allied to *P. flammeus* from S. India and Ceylon. Though I failed to identify it with anything previously described, I did not give this bird a name, hoping that additional specimens might be sent in Mr. Whitehead's subsequent collections.

wide black shaft-stripe; tail-feathers brown, margined with olive towards the edges of the outer webs.

Types of the species:—

♂ *adult.* Total length 5·5 inches, wing 2·35, tail 2·05, tarsus 0·7, culmen 0·65.

♀ *adult.* Total length 5·5 inches, wing 2·4, tail 2·05, tarsus 0·7, culmen 0·65.

PARUS SEMILARVATUS (Salvad.); Grant, Ibis, 1894, p. 408. Two adult males.

DENDROPHILA MESOLEUCA, Grant, Ibis, 1894, p. 512. (Plate IV. fig. 2.)

ÆTHOPYGA FLAVIPECTUS, Grant, Ibis, 1894, p. 513. (Plate V. fig. 1.)

EUDREPANIS JEFFERYI, Grant, Ibis, 1894, p. 513. (Plate V. fig. 2.)

ANTHOTHREPTES GRISEIGULARIS, Tweedd.; Gadow, Cat. B. Brit. Mus. ix. p. 126 (1884).

The types of this handsome Sun-bird were obtained by Mr. Everett at Surigao and Placer in the extreme north of Mindanao, and an additional male specimen was afterwards obtained by the same excellent naturalist on the island of Sakuyok. After an interval of 17 years, during which nothing more has been heard of this species, Mr. Whitehead has obtained an adult male in the extreme north-east of Luzon, and it is worth noting that not a single example of this bird was collected during the last Steere Expedition (1887–8), though all the intermediate islands of importance were visited. Probably this bird is met with only at considerable elevations, which may account for its occurrence in such widely separated localities as North Mindanao and North Luzon.

COTILE SINENSIS (Gray); Sharpe, Cat. B. Brit. Mus. x. p. 104 (1885).

A single specimen, labelled "Philippines, Cuming," is in the British Museum collection, and, so far as I am aware, it is the only one that has been previously recorded from these islands. The specimen obtained by Mr. Whitehead is an immature female, with the feathers of the upper parts mostly fringed with whitish rufous.

MUNIA FORMOSANA, Swinh.; Sharpe, Cat. B. Brit. Mus. xiii. p. 338 (1890).

This Formosan species is now recorded for the first time from the Philippine Group, an adult female having been obtained at Isabella by Mr. Whitehead during his last expedition.

ALAUDA GULGULA, Frankl.; Sharpe, Cat. B. Brit. Mus. xiii. p. 575 (1890).

Mr. Whitehead's bird belongs to the darker race known as *A. wattersi*.

PITTA ATRICAPILLA, Less.; Sclater, Cat. B. Brit. Mus. xiv. p. 438 (1888); Whitehead, Ibis, 1893, p. 498.

ALCYONE CYANIPECTUS (La Fresnaye) and A. PHILIPPINENSIS (Gould).

When a vexed question has to all appearance been satisfactorily settled, one is naturally loath to reopen it without the strongest evidence of new facts, especially when it necessitates an ornithological divorce. The evidence before me is, however, so strong that only one course is possible. To begin at the beginning of the story, *Ceyx cyanopectus* was first described by La Fresnaye (Rev. Zool. 1840, p. 33) from a specimen without any record of the locality whence it was obtained. About ten years later Eyton received a second specimen of this bird from the Philippine Islands and forwarded it to Jardine, who figured it as new under the name *Alcyone cincta* (Contr. Orn. 1850, p. 82). In 1868 Gould described *Ceyx philippinensis* (P. Z. S. 1868, p. 404) from a small Kingfisher sent him from Manila. This bird was evidently closely allied to *C. cyanopectus*, but appeared to represent a distinct species distinguished by the absence of the dark blue pectoral band.

In 1884 Major Wardlaw Ramsay received a collection of birds from Manila, which contained two specimens of

Ceyx cyanopectus and two of *C. philippinensis.* The sexes of these four specimens were not determined, but Major Ramsay and Dr. Sharpe came to the conclusion that the two supposed species were merely the male and female of one and the same bird. *C. philippinensis* was held by Major Ramsay to be the male, and *C. cyanopectus* the female. This being apparently the correct view, the former name became a synonym of the latter, and thus the matter has rested up to the present time, except that Mr. Hartert [Kat. Vogels. Mus. Senckenb. p. 133, footnote (1891)] remarked that in his opinion the two species should be kept distinct.

Mr. Whitehead, who is always extremely careful to ascertain the sexes of his birds correctly, has now sent home a male and female of *Ceyx cyanopectus,* and a male and two females of *C. philippinensis*! This is an exceedingly interesting but rather startling discovery, for since I have not the slightest doubt that the sexes of his five birds are correctly determined, it follows that the two species are after all undoubtedly distinct, and must therefore be once more separated. *C. cyanopectus,* in addition to the dark blue pectoral band which is absent in *C. philippinensis,* has the bill longer and more slender, the underparts paler rufous, and the flanks dark blue instead of rufous. I am inclined to believe that the *Ceyx steerii,* Sharpe, from Mindoro is merely a somewhat dull-coloured example of *C. philippinensis,* with the breast and underparts brownish instead of orange-chestnut; the more so as a second example from the same locality is perfectly similar to Gould's type. In volume xvii. of the 'Catalogue of Birds,' p. 186, Dr. Sharpe has accidentally put down Eyton's bird as the type of the species (*Ceyx cyanopectus,* La Fresnaye), which of course it is not. The sentence should read, "Type of *Alcyone cincta,* Jardine."

The two species *C. cyanopectus* and *C. philippinensis* do not really belong to the genus *Ceyx,* but should be referred to *Alcyone,* and stand as follows:—

ALCYONE CYANIPECTUS (La Fresnaye).

Alcyone cyanopectus, Jard. Contr. Orn. p. 82 (1850); Sharpe, Monogr. Alced. p. 55, pl. 17 (1869).

Alcyone cincta, Jard. Contr. Orn., plate only (1850).

Ceyx cyanopectus, Wardlaw Ramsay, Ibis, 1884, p. 332 [part], pl. ix. fig. 2.

Ceyx cyanipectus, Sharpe, Cat. B. Brit. Mus. xvii. p. 185 (1892) [part].

An adult male and female were obtained by Mr. Whitehead.

ALCYONE PHILIPPINENSIS (Gould).

Ceyx philippinensis, Gould, P. Z. S. 1868, p. 404; Sharpe, Monogr. Alced. p. 113, pl. 37 (1869).

Ceyx cyanopectus, Wardlaw Ramsay, Ibis, 1884, p. 332 [part], pl. ix. fig. 1.

Ceyx cyanipectus, Sharpe, Cat. B. Brit. Mus. xvii. p. 185 (1892) [part]; Grant, Ibis, 1894, p. 520.

An adult male and an immature female were sent in this collection; an adult female was also sent in the last collection and, as it now appears, wrongly referred to *Ceyx cyanipectus*.

CEYX MELANURA, Kaup; Sharpe, Cat. B. Brit. Mus. xvii. p. 180 (1892).

An adult female.

EURYSTOMUS ORIENTALIS (Linn.); Grant, Ibis, 1894, pp. 409, 519.

IYNGIPICUS VALIDIROSTRIS, Blyth, Cat. B. Mus. As. Soc. p. 64 (1849).

In my previous article (Ibis, 1894, p. 520) I mentioned a small species of Woodpecker from North Luzon under the name of *Iyngipicus maculatus* (Scop.). I followed Mr. Hargitt's Catalogue (xviii. p. 332); but he now tells me that the Luzon bird is not *I. maculatus*, but should probably stand as *I. validirostris*, Blyth. He has very kindly furnished me with the following notes:—

"'Le petit Pic d'Antigue' of Sonnerat (*Picus maculatus*, Scop.) was described from a specimen obtained in the island of Panay, Philippines, and there can be no doubt that it is distinct from the Luzon species of *Iyngipicus*, which is most probably *I. validirostris* of Blyth, although that author was not acquainted with the exact locality whence his species came. When I wrote my catalogue of the *Picidæ* in the British Museum, I had only Luzon specimens to work from, and had no idea that the Panay bird differed; consequently I considered the Luzon examples to be *I. maculatus.* Specimens of an *Iyngipicus* having been procured in Panay by the Steere Expedition, 1887–88, I at once recognized the bird as quite distinct from the Luzon species, and both will be found recorded, and their habitats given, by Professor Steere, in his 'List of the Birds and Mammals collected by the Steere Expedition to the Philippines,' 1887–8, published in Michigan, 1890. Through the courtesy of Mr. Moseley, I was able to add the Panay species to my collection.

"The following brief diagnosis will show the points of difference between the two species :—

"IYNGIPICUS MACULATUS.

"♂. Above brown (tinged with olive) and white; the spotting on the breast also brown; a *broad and very conspicuous* red stripe on the side of the occiput.

"*Hab.* Panay and Guimaras.

"IYNGIPICUS VALIDIROSTRIS.

"♂. Above brownish black (without any olive tinge) and white; the crown brown and lighter than the ground-colour of the upper parts; the red stripe on the side of the occiput *narrow,* and much less conspicuous than in *I. maculatus.*

"*Hab.* Luzon and Marinduque.

"The females of these species differ (as does this sex in all the *Iyngipici*) in the absence of red on any part of the occiput."

MICROSTICTUS FUNEBRIS, Valenc.; Grant, Ibis, 1894, p. 409.

EUDYNAMIS MINDANENSIS (Linn.); Grant, Ibis, 1894, p. 520.

PRIONITURUS LUCONENSIS, Steere; Grant, Ibis, 1894, p. 410.

Tanygnathus everetti, Tweedd.; Salvad. Cat. B. Brit. Mus. xx. p. 432 (1891).

It is curious that this fine Parrot should be found in the extreme north of Luzon; hitherto it has been met with only in the more southern islands of the group, Panay, Samar, and North Mindanao. One might have expected the Luzon representative, should such be found, to prove distinct from the southern species, but the bird sent by Mr. Whitehead—an adult male—is perfectly similar to the specimens of *T. everetti* in the British Museum collection.

Ptilopus occipitalis, G. R. Gray; Grant, Ibis, 1894, p. 521.

Carpophaga nuchalis.

Carpophaga nuchalis, Cabanis, J. f. O. 1882, p. 126 [Luzon]; Kutter, J. f. O. 1882, p. 177 [Baatan Dist., Luzon]; Salvad. Cat. B. Brit. Mus. xxi. p. 190 (1893).

Several examples of this extremely handsome and perfectly distinct Fruit-Pigeon were obtained during the present expedition. When Count Salvadori wrote the catalogue of the Pigeons quoted above, the British Museum did not possess a single example of this bird, and he was somewhat doubtful as to its being really separable from *C. paulina*, a native of Celebes and the Sula Islands. But on comparing Mr. Whitehead's specimens from N.E. Luzon with examples of *C. paulina*, the great difference between the two is at once apparent, the patch on the nape of the former being much smaller, and of a deep maroon colour instead of chestnut. In fact, *C. nuchalis* is, perhaps, really more closely allied to typical examples of *C. chalybura* from Luzon (see Ibis, 1894, p. 521), the only difference being that the latter has the whole of the nape-patch dark greyish lilac, while both differ from *C. paulina* in having the pale grey mantle more sharply defined from the metallic green of the back.

Salvadori, following Cabanis's original description, states that *C. nuchalis* is a little smaller than *C. paulina*, but in the specimens before us just the reverse obtains.

C. nuchalis ♂ wing 9·3–9·4 inches; ♀ wing 9·2.

C. paulina ♂ wing 8·6–8·8 inches.

It still remains to be proved whether *C. nuchalis* really occurs in Mindanao and Mindoro. Dr. Kutter's specimens were obtained in the district of Baatan, to the north of Manila, while all Mr. Whitehead's birds were found in the mountains of the extreme north-east of the island.

Ptilocolpa carola (Bonap.); Grant, Ibis, 1894, p. 521.

Ptilocolpa griseopectus, G. R. Gray, Mus. Brit. 1854 (fide Bonap.).

Carpophaga griseipectus, Salvad. Cat. B. Brit. Mus. xxi. p. 205 (1893).

I have no doubt that *P. griseipectus* is the male and *P. carola* the female of one and the same species. Mr. Whitehead writes:—"The two Carpophagas are, in my opinion, of one species, as I have sexed five males, but only two females it is true—still they were shot on the same tree and in company with the others, the second female getting utterly destroyed by the fall. I will shoot any I see, sex, and eat them; but I want some more females, as I have only sent one, and that a bad specimen."

Turtur dussumieri (Temm.); Salvad. Cat. B. Brit. Mus. xxi. p. 423 (1893).

An immature female.

Anas luzonica, Fraser, P. Z. S. 1839, p. 113; Tweedd. Tr. Z. S. ix. p. 242 (1875).

Nycticorax manillensis, Vigors, P. Z. S. 1831, p. 98; Steere, List Birds & Mamm. Philipp. Exped. p. 27 (1890).

VIII.—*Notes on some Hawaiian Birds.*

By R. C. L. Perkins.

In 'The Ibis' for January 1893 (pp. 101–112) there were published some notes of mine on collecting in Kona, Hawaii. I propose now to supplement that paper with notes on some of the more interesting birds since observed in other parts of the Hawaiian group, while at the same time I shall have occasion to refer briefly to some of those species noticed in my former paper. In some genera the habits of the slightly modified species on the different islands are so nearly the same that it would be a mere repetition to detail those of each particular species.

Of the Fringillidæ (nearly all of which are peculiar to the Island of Hawaii) I have already given some account of the habits; but there remains one,—*Pseudonestor xanthophrys*,—peculiar to the Island of Maui, which is perhaps the most remarkable form of all. It is local and rare, and seems to be confined to the highest forest on Haleakala, at an elevation of some 5000 feet above sea-level. Being very tame and apparently unwilling to fly far, I had on several occasions excellent opportunities to learn something of its habits, and especially of the use of its curiously formed and exceedingly powerful beak. The bird has an evident predilection for the koa trees (*Acacia falcata*), and it is from these that it mainly gets its food. This consists of the larvæ of a highly peculiar endemic genus of Longicorn beetles (*Clytarlus*), of which there are in the islands a considerable number of species, nearly all of them attached to the different species of native acacias. The larger ones usually burrow in the main trunks, the smaller in the limbs and twigs above. It is on the larvæ of the latter that *Pseudonestor* feeds and in procuring them has developed the large hooked beak, the powerful jaw-muscles, and heavy skull, which constitute its chief peculiarities. It may be observed that the twigs in which the *Clytarli* have their burrows are not generally rotten, but dry, and of excessive hardness, often surpassing in this respect the still living and unaffected branches. The bird is sluggish, in its movements parrot-like in the extreme, especially in the varied hanging attitudes that it assumes, while the similarity is still further increased by the shape of its beak.

Those that I saw in the act of feeding were generally clinging to the under sides of the thin branches or twigs, the head raised above the upper surface; the point of the curved maxilla was thrust into the burrow, the short mandible opposed thereto, and pressed against the side or under surface of the twig, and the burrow opened out by sheer strength. All that I shot contained larvæ of these beetles, as many as 20 or 30 being found in the stomach of a single bird. No less than four species of *Clytarlus* were found on the acacias in the actual haunts of *Pseudonestor*; these too, like the bird, are all of species peculiar to the same island. When alarmed the bird gave frequent utterance to a short squeaking cry; it has besides a decided song, which reminded me much of that of the green *Himatione*. Once I heard it sing on the wing, as it crossed a gulch*.

The unpleasant scent of *Pseudonestor*, like that of many Drepanididæ and other Hawaiian Finches, is very noticeable.

Looking at the Hawaiian Finches as a whole, it may be noticed how wonderfully the structure of each of them has been specially developed according to the nature of its own particular and most important article of food. Thus, *Pseudonestor*, as above mentioned, has an enormous development of beak and skull and muscles attached thereto, for splitting the koa twigs; *Chloridops* has a huge beak and still heavier skull and muscles, which enable it to crack the hard nuts of the bastard sandal (*Myoporum*); then there is the strong cutting-beak of *Rhodacanthis* for dividing up the koa beans, and a large development of the abdominal portion of the body, in accordance with the large fragments that it swallows; the shorter bill of *Loxioides*, which deftly cuts off the bean of the mamane acacia (*Sophora*), while the bird holding it in position with its foot opens the pod and devours the seeds; and, lastly, the hooked bill of *Psittacirostra*, with which it digs out the separate components of the fleshy inflorescence of the "ieie" (*Freycinetia*), for this is certainly its natural food, though it has now come to feed largely on various introduced fruits—guavas, oranges, and the like. Besides their special foods, all the Finches vary their diet at times with the larvæ of Lepidoptera.

Since my note on the habits of *Heterorhynchus wilsoni*, Rothschild, was written, I have had the opportunity of observing those of two other species,—*H. affinis*, Rothsch., on Maui, and *H. hanapepe*, Wilson, on Kauai. Both of them are found in the upper forest, though stragglers may occur at times at lower elevations. Their habits seem to me quite identical; and going straight from the haunts of the one to those of the other, I failed to detect any difference in their songs. At the same time, besides the ordinary song (which resembles that of *H. wilsoni*, the Hawaii species, but is less loud), the Maui bird has a second distinct one, much like that of an introduced *Carpodacus*, which abounds in the same locality and nests there. This is no doubt imitated, as some of the native birds not infrequently sing like some other (native) species, the song of which is quite unlike their own proper one. Their call-note is a sharp "keewit" once or twice repeated and louder than that of other birds in which it is very similar. This the sexes are repeatedly uttering, pausing in their feeding at short intervals for this purpose. Their food consists mainly of various insects, which they procure much in the same way as does *H. wilsoni*, but they are altogether quieter and less vigorous in their movements. In their stomachs I usually found spiders, wood-feeding larvæ of Tinæidæ and Geometridæ, and wood-boring beetles, especially the endemic brassy weevils of the genus *Oodemas*. Sometimes, too, they contained small pieces of lava, no doubt to aid in breaking up the hard shells of the beetles mentioned. That *H. affinis* also sucks honey I obtained decisive evidence, though I never saw it myself; probably all the species do so at times except *H. wilsoni*, which has become more entirely specialized for a Woodpecker's mode of life.

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* See Ibis, 1893, p. 108.

In life, apart from their very distinct song and call-notes, these birds and the *Hemignathi* can readily be distinguished from all the other native species by the extremely short tail in proportion to their total length,—a distinction which the eye can appreciate at distances at which neither the form of the beak nor the colour of the plumage is any longer to be made out. Moreover the *Heterorhynchi* differ in another respect from all the other green birds, for the latter, even in feeding on the limbs of trees, advance by more or less distinct hops, whereas the former regularly creep over the surface of the trunks and branches.

In the genus *Loxops*, which contains the smallest of the native birds, the different species have much the same habits, and the song, which is short and simple, though sweet, is nearly the same in all. Their call is a plain "keewit," uttered once or repeated, and is constantly to be heard. They seek their food amongst the leaves, especially at the ends of the branches, more rarely on the limbs themselves. It consists largely of caterpillars and the smaller spiders. They also suck the nectar of the ohia flowers (*Metrosideros*); this I saw them do but rarely, and only two of the species, *L. aurea* and *L. cæruleirostris.* Most often, when seen amongst the blossoms, they were merely seeking insects, thereby attracted; but several times I shot specimens with the beak dripping, and on tasting the fluid found it to be, beyond doubt, the nectar of these flowers.

From the other green birds, their green young and females are readily distinguished, at any height, by their more forked tails, which, combined with their short, thick beaks, give them a very Finch-like aspect.

The young generally follow the parents (some going with the male, and some with the female), who feed them most assiduously even after they appear well able to shift for themselves.

The difference in colour of the sexes is very marked, while the male of *L. aurea* is dimorphic (yellow or red), though with occasional intermediate forms. *L. cæruleirostris* of Kauai, so far as colour is concerned, has claim to be considered the primitive form, both sexes largely retaining the green plumage, which only appears in the female and young of the red species on the more southern islands.

On one occasion I saw a pair of *L. aurea* building, high up in a tall ohia tree, toward the end of a branch. They came down to the ground for material, stripping off the brown down that covered the young fronds of some stunted "pulu" ferns. On another occasion I watched a pair sporting on the wing, now ascending, now descending, but gradually rising upwards till they became mere specks in the sky. It must have been several minutes before they finally alighted at no great distance from their starting-point. Both were splendid males.

The genus *Oreomyza*, like *Himatione*, has a species on each of the six larger islands of the group, which alone, at the present day, have any forest upon them. All the species are green or yellow, except the bright flame-coloured bird on Molokai, and consequently have a great superficial resemblance to the species of *Himatione*.

They are pre-eminently insect-eaters, hunting for these on the trunks and branches of the trees. Their cry is a monotonous 'chip, chip,' which they utter very vociferously when their haunts are intruded upon. It is a little different—rather less sharp—in the species found on Hawaii and Kauai (*O. mana* and *O. bairdi*).

The two *Oreomyzæ* peculiar to Maui and Lanai (*O. newtoni* and *O. montana*) have a distinct song, short, rather vigorous, but very rarely heard. Apparently they sing only when intensely excited, as, for instance, when one male has been successful in driving off another intruding upon his domain *. On such occasions I have seen the victor rise spirally upwards to a height of from twenty to fifty feet, pouring forth its little song while on the wing, then suddenly darting down again to the concealment of the brush. Very rarely indeed I detected the same species feeding on the nectar of the lehua flowers, and shot them with the beak dripping therewith. *O. mana* of Hawaii generally frequented the tall koa trees, also coming down into the underbrush of bastard sandal; *O. bairdi*, of Kauai, was mostly seen in the lehuas; the other species largely frequented the low brush, being frequently seen amongst the fern-fronds and even on the ground. They feed much on caterpillars and small moths, which they find on the trunks and branches, climbing along the undersides of the latter and up the largest of the former with equal ease. Large moths, when caught, they hold down with their claws, tearing off the wings before eating them. To Owls they have the greatest aversion, and when one flies overhead they become greatly excited, all those in the neighbourhood joining in the clamour. I have seen some twenty or thirty *Oreomyzæ* gathered around one of these birds, which was sleeping on a dead branch, but they kept at a respectful distance, and did not venture out of the brush. It is highly probable that in past times they were largely preyed on by the Owls, the favourite food of which they possibly were, as they lack the objectionable odour of the other green birds, and the latter never seemed similarly frightened. As to the Owl (*Asio accipitrinus*) itself, it now preys mostly on the introduced mice, which abound, especially on the lower slopes and plains, but at times it may be seen hawking for small birds in parts of the forest where mice are quite absent. Moreover, it was probably much more abundant in past times, as it was never destroyed by the natives, who considered it a most powerful god. The old navigators speak of its great abundance and tameness; but since the settling of the country by white men it has been largely destroyed (though still abundant), since it is given to carrying off the newly-hatched chickens. To this day few natives will shoot at one of these birds.

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* This refers more especially to *Oreomyza montana*. *O. newtoni* I heard sing more frequently.

To one species referred to this genus by Mr. Rothschild in his book ('The Birds of Laysan,' &c.) I have not alluded. This is the *Himatione parva*, of Kauai, which has neither the habits nor appearance of *Oreomyza*, but belongs rightly to the genus in which it was first placed. It is to a great extent a honey-sucker, like its congeners. The slight difference between it and them in the wing-formula is quite insufficient to detach it from its allies. It also has the nasal opercula bare, as in the other members, not overhung with antrorse feathers, like *Oreomyza*. But, apart from this, the formation of the tongue at once shows its proper place. In *Himatione* and *Loxops* this is elongated, very narrow, and terminates in a brush. The lateral margins are bent upwards, to meet in the middle line above, and form a tubular canal, for about half the length of the horny part of the tongue. In *Oreomyza* the tongue is very short and comparatively broad, the sides but slightly raised, and not nearly meeting above; it is not terminated in a brush, but the apex is cleft in the middle for some considerable depth. *Himatione* and *Loxops* (including *Chrysomitridops*) are at once distinguished from each other by the longer, thinner, more or less curved bill of the former, the beak of *Loxops* being short and thick with the apex of the mandible more or less deflected (either to the right or left), tending to cross the maxilla.

The genus *Palmeria* contains but a single species (*P. dolii*), which inhabits the higher forests of both Molokai and Maui, especially the wetter portions, where fog and rain are of constant occurrence. On the latter island the natives call it "akohekohe," but on Molokai several of them gave it the name of "hoe," and by repetition of this word gave a very recognizable imitation of its song, showing thereby that they were well acquainted with the bird. Both in habits and structure the bird reminded me strongly of *Himatione sanguinea*, having the same quick gliding movements amongst the foliage; while the form of its tongue and its whole general appearance (masked only by its curled crest) were equally convincing proofs of its relationship to the same bird.

Generally it frequents the ohia trees, feeding on the abundant nectar of their red blossoms; often the curled feathers of its crest were covered with the entangled pollen-grains of these flowers. It is also very fond of caterpillars and other insects, which it procures both from amongst the foliage and from the dead limbs of the same trees.

Like many other of the birds, it exhibits a mixture of curiosity and timidity at the sight of man; but the former predominates, and it can readily be called by imitating its call-note—a simple, clear whistle—and will approach even within arm's-reach. Its song is highly peculiar, a curious vibrating sound, unlike that of any other native bird. It is this which the natives imitate by the words "hoe, hoe." When in full song (as in other Drepanids, *Vestiaria coccinea*, *Himatione sanguinea*, &c.) several other notes are added, which to the human ear are far from beautiful, having the sound of "glŭk-glŭk-glŭk," rapidly uttered. Many times I heard the adult male singing its strained song, perched on the topmost bough of some dead ohia, with head upraised, and the swelling of its throat visible even from afar off. Before the breeding-season their call-whistle is constantly to be heard, especially on the approach of fog or rain, when the bird is most easily obtained. They have two other distinct calls besides the whistle—the one a gentle cry, rather like that of *Drepanis*, but softer; the other a "scolding" note, not unlike that of the Olomao (*Phæornis*).

The sexes keep together even after the breeding-season, so that if one is seen its mate is sure to be near at hand.

The young too follow the parent birds, often indeed until they themselves have almost arrived at their full plumage, and long after they have acquired the full song of the adult.

They have the characteristic Drepanid odour, much more marked in some specimens than in others. On Molokai these birds formerly occurred at much lower elevations than they now do. With the destruction of forest by cattle, the mountain rains and fogs have receded, and the birds with them.

As to the habits of *Drepanis funerea**, which inhabits the higher forest of Molokai, and is at present known only from that district, I cannot do better than quote from my notes, made on some occasions when I met with this bird, most of my knowledge of its habits being contained therein.

June 18*th*, 1893.—"I had been wading all day in knee-deep mud and working hard all the time with the axe and clearing a path, when suddenly I heard a very different sound, a cry as clear as a bell, with just the least resemblance to that of the 'Oo' (*Acrulocercus*). I made sure that I had come across Palmer's new species †, and was practically certain when I saw fly onward a good-sized black bird. It pitched about 25 yards ahead, but I could not see it for the density of the brush. Every four or five seconds it uttered its remarkable call. I forced through about ten yards, and then I saw the bird clearly, perched across a bough, straight in front of me, and obviously very uneasy. I fired instantly, and the bird dropped straight in thick brush; but I marked a twig it shook in its fall, and gathered it up at once. To my surprise I saw no sign of yellow ear-feathers, nor indeed any yellow feathers at all, but before I had time to fully realize this I heard just ahead the same cry. Throwing down axe and hat, and the bird into the latter, I pushed on, and saw another similar bird, no doubt the mate of the one just shot. It was restless, and I got but a view of its head and part of the body. However, it dropped as straight as the first one, and in a clearer place, so I easily found it. Then I saw at once I had no 'Oo,' but a *Hemignathus*-like creature with shortened mandible, and the excessively strong smell which is characteristic of the Drepanididæ.

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* Newton, P. Z. S. 1893, p. 690.

† Mr. Rothschild's collectors had discovered a new form of "Oo" (*Acrulocercus bishopi*) on Molokai some months before I visited that island.

"All the feathers on the top of the head of each were covered with a white sticky substance, apparently pollen of some flower, and they are no doubt honey-sucking birds. The cry is not of the loud character of that of the 'Oo,' but is startlingly clear, and could probably be heard at a considerable distance."

June 27th.—"Saw an 'Oo' and *Drepanis* * in the same tree with a number of the red *Himatione*. The 'Oo' was out of voice, and its cry closely resembled that of the *Drepanis*. But for its long tail the former could hardly have been distinguished from the latter in the dense foliage. The 'Oo' many times drove the other from the tree, to which it as invariably returned. In its turn the latter would drive away the red birds, and either one or the other drove off a casual *Palmeria* that came thither." I shot all three, first the "Oo," then *Drepanis*, and lastly the *Palmeria*.

Like the other Drepanididæ, *D. funerea* is also insectivorous. "The specimen obtained I watched for some time before shooting. It was thrusting its bill under the wet moss which covered the tree-trunks, in search of insects. I could tell that the long tongue was being darted in and out, and that so rapidly that it appeared like a liquid streak, the eye not being able to distinguish each separate movement. It had not so silvery an appearance as is familiar in our own Woodpeckers."

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* I have substituted the name *Drepanis* for the various appellations by which I distinguished these birds in my notes. At the time I considered it a *Hemignathus*, or of a new genus connecting *Hemignathus* with *Drepanis*.

These birds, however, feed mainly on nectar, especially of the blossoms of the tree-Lobeliaceæ, which depend on some of the native birds for fertilization. The following, as I believe, are the only species capable of performing this act (at any rate as regards the numerous species of Lobeliads that came under my notice) :—*Acrulocercus*, *Drepanis*, *Vestiaria*, and *Hemignathus*. *Himatione*, it is true, also sucks these flowers, but is even detrimental to the plant, as it pilfers the nectar by boring through the base of the corolla. When ripe the pollen is poured out, on irritation, behind the base of the beak, where the bird's head presses the anthers, and may often be seen adhering as a whitish glutinous mass, almost concealing the feathers. After the flower is fertilized, the blossom splits off, leaving the green hemispherical base, which grows into a yellow fruit with innumerable minute seeds scattered through the pulp. It is sweet, but gritty, and as eagerly devoured by the "Ou" (*Psittacirostra*), and by it the seeds are scattered far and wide.

Like most other birds, which have been thrust back to the furthest depths of forest, *Drepanis* is very tame, coming close up out of curiosity, and even perching just overhead, turning its head this way and that to gaze at the intruder.

The three still existing species of *Acrulocercus* differ more or less from each other in their habits. *A. nobilis* on Hawaii usually frequents the loftiest trees, while the Molokai species (*A. bishopi*) is found in the dense tangled brush of the boggy mountain-tops. This may be largely due to the persecution that the former suffered in past times, from those in quest of the yellow feathers, in which the taxes were paid, to be finally made up into capes, cloaks, and helmets for the chiefs. I could not ascertain that the

Molokai species was ever used for the same purpose in spite of its yellow feathers.

Both these species live chiefly on the nectar of the lehua blossoms and the various arborescent lobelias, at times also on the fruit of the banana; and my friend Mr. G. Monro of Kauai assured me that he had shot *Acrulocercus nobilis* while devouring the fleshy inflorescence of the *Freycinetia*.

Both have the same loud, harsh cry, easily heard at a great distance; after the breeding-season, however, and during the moulting period the voice is much less distinct. Except under stress of weather, at least on the leeward side of the island, *A. bishopi* is only found near the backbone of the mountains, having quite disappeared from several large tracts which formerly were well-known haunts of this species. Though shy at the sight of man, this "Oo" will still approach out of curiosity, moving restlessly from branch to branch, at one moment appearing in full view, to as suddenly disappear again beneath the cover of the leaves.

The Kauai species is of very different habits, being mainly insectivorous, though at times sucking honey from flowers. Like the others, it is partial to the Lobeliaceæ, and I several times shot it with its head smeared with sticky pollen-masses derived from those flowers.

It has a clear, sweet song, with which in early morning, and again shortly before dark, the forest is fairly filled. At the same time the resemblance to the cries of the other species is readily detected, though mellowed down and woven into song. The cry of the female, especially when alarmed, is a mere reiterated squeak, so different from that of the male that for a long time I was at a loss to know what bird could produce it.

The form of the bird has become greatly modified by its habits; its tail is comparatively short, with narrow, pointed, and extremely strong feathers. This aids it largely in climbing on the straight trunks of the ohia trees, which it does with ease, pressing the tail firmly against the surface. There, under the loose, large flakes of bark, it finds spiders, cockroaches, crickets, and other insects, which form the main part of its food. The rattling of this loose bark caused by its bill, when thrust beneath it, is often very plainly heard.

In concluding my notes on Hawaiian birds, I would take this opportunity of correcting some unfortunate mistakes which were overlooked in my former paper*. That there should be some is not to be wondered at, as I had not a book of any sort for reference, and until my return to England I saw no copy of that paper, those sent to me having unfortunately miscarried. For *Psittacirostra psittacea* throughout, read *Loxioides bailleui*, and *vice versâ*. In the same way, *Hemignathus obscurus* and *H. olivaceus* should be transposed, the latter being the bird I now call *H. wilsoni*. For "Akakani," p. 102, read "Akakane"; for "Elepeio," p. 110, "Elepaio"; for "Ona ka ia" (in two places), "Ono ka ia." The Palila, p. 104, is really the name of *Loxioides*, not *Chloridops*; the Ou-po-papale (so written by natives, but probably more correctly Ou-poo-papale) is the yellow-headed male of the *Psittacirostra*.

IX.—*Description of a new Species of Finch of the Genus* Crithagra *from South-east Africa.* By H. B. Tristram, LL.D., D.D., F.R.S.

In a small series of skins received some months since from my friend Dr. Percy Rendall, collected by him at Barberton in the Transvaal, were a pair of Finches of the genus *Crithagra*, which I was unable to identify with any known species. Happening to be in London a few days ago, I took the opportunity of showing the birds to Dr. Sharpe and Capt. Shelley, who both agreed with me that the species was, so far as we knew, undescribed. Dr. Percy Rendall tells me he shot the pair out of a small flock which he put up in a piece of scrub some distance from Barberton, and that in all his expeditions he never met with the bird again. The bill seems to me peculiar, very angular, like that of the Greenfinch, but much sharper at its angles and rather compressed laterally. I subjoin the description.

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* 'The Ibis,' January 1893, pp. 101 *et seqq.*

CRITHAGRA RENDALLI, sp. nov.

C. ♂. Fronte et loris flavis: capite et collo flavis, brunneo angustè striatis: scapularibus, tergo, et uropygio brunneo-nigris, flavo-marginatis: subtùs totus aurantiaco-flavus: remigibus et rectricibus fuscis, flavo-marginatis: subalaribus pallidè flavescentibus: rostro nigro: tarsis et pedibus fuscis.

♀. Suprà nigrescenti-fusca, plumis albido-marginatis: loris et spatio interoculari albidis: subtùs pallidè flavida, striis fuscis rarioribus angustioribus: subalaribus albescentibus: rostro, tarsis, et pedibus fuscis.

Long, tot. 5 poll., alæ 2·75, tarsi ·66, rostri à rictu ·5.

Hab. Barberton, Transvaal.

Both specimens were taken on the 16th Feb., 1894. [" Irides hazel," P. Rendall.]

X.—*On Use and Abuse of Generic Terms.* By H. B. TRISTRAM, LL.D., D.D., F.R.S.

I PRESUME it will be universally admitted that no part of the scheme of the great founder of modern natural science is of greater practical value to the student than the binomial system—or, inasmuch as genera are purely ideal, I might more accurately say, the binomial theory of Linnæus. Yet, though genera are arbitrary divisions, and therefore can be multiplied or diminished at pleasure, it surely does not follow that any author is justified in capriciously adding to their number.

A genus has been defined to be a re-union of races called species, brought together by a consideration of their relations, and constituting so many small series, limited by characters which are chosen arbitrarily in order to circumscribe them. But, though chosen arbitrarily, they should surely be chosen consistently. Forgetfulness of this principle by writers each of whom has his own idea, or more frequently none at all, of the conception of a genus, has led to the repulsive list of synonyms in barbarous and grotesque compounds, purporting to be derived from the classic tongues, which follow the selected generic name in every ornithological treatise we open.

Now, genera being arbitrary arrangements, invented simply for convenience, surely there should be some general principles agreed upon to check their needless multiplication—*i.e.*, some recognized rules as to structural differences. If a genus be a group of species, having one or more characters in common in which they resemble each other, and having one or more common characters in which they differ from all other species, we may set a limit to the confusion produced by the ever-multiplying lists of genera; for, as Linnæus has reminded us, "confusis nominibus, omnia confundi necesse est." Genera being invented for convenience, convenience should be kept in view in their use. I well remember the late Lord Tweeddale remarking that we ought never to invent a genus, unless for a clearly defined *structural* difference, except in cases where the number of known species is inconveniently large, and then, as genera are after all arbitrary, we are fully justified in dividing the genus. Lord Tweeddale instanced the case of *Turdus*, which would be overwhelmingly numerous unless *Merula* were separated from it. But if we had known only three or four species of each, he would not have separated them. So with Linnæus's genus *Motacilla*. If that had been retained unbroken, the binomial system might as well never have been invented.

The question is—Is the multiplication of genera each containing one or two species, and those closely allied, an aid or a hindrance to the study of the subject? To quote the words of Dr. Sharpe on another point in nomenclature, and which I would apply to many of the new-fangled genera:—"An arrangement we shall never adopt, as we consider it a clumsy and unnecessary method of nomenclature, and one that in the hands of unscrupulous writers may be employed *ad lib.* to gain a little temporary notoriety, and end in making the study of birds impossible. Can any science bear the weight of such a system of nomenclature?"

In this matter of the multiplication of genera, the practice of different authorities presents startling contrasts. Let us take 20 volumes of the British Museum Catalogues, consisting wholly or partially of Old-World birds. Mr. Seebohm compiled one volume, Dr. Gadow two. Neither of these invented a single new genus. Mr. Salvin in his volume introduced one new genus; Mr. Hargitt four; Capt. Shelley five, four of which he had previously published; Mr. Ogilvie Grant, in a volume and a half, six new genera; Count Salvadori, in the volumes on the Parrots and Pigeons, 12 genera, of which he had already published 5; while Dr. Sharpe, in 10½ volumes, has favoured us with 108 new genera. It is obvious that the "genus-standard" of Dr. Sharpe must be very different from that of Messrs. Hargitt, Seebohm, Salvadori, and others, who in 9½ volumes have been content with 28 new genera, as against his 108.

Dr. Sharpe has certainly made some genera that will stand the test of time. No one can carp at *Clytoceyx* as not being a good genus; but at least 100 of his generic diagnoses would have been treated as simply specific by his collaborateurs in the B. M. Catalogues, if we may judge by their own generic definitions. My complaint of this "genus-facture" is that it is absolutely capricious; that the authors seem to be guided by no settled principles; that it overloads us with synonyms; and that, so far from being a help, it is an actual hindrance to the student. In fact, it is doing for genera what Brehm did for species; and as most writers ignore his species, so, in mercy, it is to be hoped that many of these genera will be consigned to oblivion. Among the prominent offenders are several of our German friends and our American cousins, but of native authors certainly Dr. Sharpe is pre-eminent; and I fear he does not improve with age, for his last volume, with its 18 new genera, 16 of which comprise but 17 species, surpasses all its predecessors. There are indisputable genera in the same volume which comprise but one or two species, but what analogy is there between such genera as *Notornis*, *Tribonyx*, or *Pennula*, and *Amaurolimnas*, *Limnogeranus*, and *Sarcogeranus*? or, to take an earlier example, *Rhinocorax*—a true Raven, if ever there was one, but transferred to generic solitude, because its upper nasal bristles have an upward turn? I can only say that if genera are to be so multiplied we shall soon be little better off than before Linnæus struck out his binomial system. In Dr. Sharpe's words "It will end in making the study of birds impossible"; and I do implore him in future volumes to study, not foreign examples, but those of his own colleagues in that great series of which we owe so large a part to his own laborious energy.

XI.—*Further Remarks on the Mode of Carriage of the Legs in the Birds of Prey.* By Ernst Hartert.

In 'The Ibis' for 1894 (p. 547) the Editor called attention to my remarks about the carriage of the legs by the Raptores, and asked the Members of the B.O.U. whether I was right or not. I hope they will publish their observations, as there seem to be different opinions. At the same time such questions can certainly not be settled by opinions, but only by accurate observations.

I myself was formerly under the impression that the Raptores carry their feet drawn up in front against the abdomen, because all the figures and all the stuffed birds which I have seen were arranged thus. I was therefore much astonished to find that *Milvus govinda* and *Haliastur indus*, which are so fearless in India that one can observe them quite closely, carried their legs stretched out behind under the root of the tail, and afterwards I saw the same course followed by birds of several other species. I therefrom conclude most positively that all the Raptores do the same, for such habits as this are never peculiar to certain species. Besides, a number of exact observers, both in Germany and Africa, have published in the 'Ornithologische Monatsberichte' their own observations on other species of Raptores (after I had opened the controversy), which agree with my own. It is true that the contrary has been stated by two observers, but they make such sweeping and general statements that I do not doubt that their memory failed them. They evidently wrote from recollection, and did not quote particular observations of the fact.

I do not know what the general impression of British observers is, though in my own country my statements seemed to astonish everyone, and to be contrary to the general opinion. I hope, however, that British ornithologists will agree with me on this subject, and I am glad to be able to give two pieces of testimony already.

My friend Mr. E. C. Stuart Baker, the keen observer of Cachar, writes to me as follows, and kindly allows me to publish his letter:—

"You are undoubtedly right in what you say regarding the carriage of their legs by the Raptores. I have often noticed *Milvus govinda* and its allies hawking after 'white ants.' Anyone who has the patience to watch them for a short time will notice that each time an insect is seized the foot is brought downward and forward, and then swings back almost straight, when the insect has been delivered into the bill. Again, I have seen *Polioaëtus plumbeus* strike at fishes, and having frightened it I have noticed its legs swing back. The same also is the case with *Spilornis cheela*. A pair of these birds used to haunt my bungalow and steal the chickens, but so long as they confined their diet to the inexpensive domestic fowl I did not interfere with them, and had many opportunities of watching their movements. Another pair I kept for over two years in semi-captivity. I had them from the time when they were nestlings, and they became so tame that they were seldom confined to their aviary, and these birds *most assuredly* flew always with their legs behind them. Perhaps, however, the easiest way of finding out how birds of this order carry their legs is to watch them in the act of perching, in which the action of bringing the legs down from behind, then forward and up, may most distinctly be seen. I once kept about a dozen specimens of *Tinnunculus amurensis*, and these in the same way made their legs describe an arc before perching; however, when *about to strike* these little Kestrels carried their legs forward and extended. [This latter observation is quite right, but the feet are brought forward by the strong Falcons and Eagles, which strike upon their prey with great force, *only just when shooting down* upon the victim, never by such birds as *Milvus* and *Haliastur*, which have quite a different mode of capture.—*E. H.*] *Haliastur indus* carries its legs precisely as does *Milvus govinda*. *Haliaëtus albicilla* carries them behind, for I once noticed a specimen when perching. As regards *Accipiter virgatus*, though I have kept many of them, I can remember nothing about their mode of perching."

Again, Mr. Ogilvie Grant, of the British Museum, informed me that I was quite right in what I had said about the situation of the feet in birds of prey in tranquil flight, for he had often watched it when hawking, and that Hawks hold their talons in front only when stooping down upon their prey.

I do not know why there should be anything strange in these observations, for by far the majority of birds carry their legs behind. Undoubtedly all Waders, Ducks, Herons, Cranes, Storks, and Rails do this, and, I may add, *all the Game-birds* also! This last fact has often been doubted, and I regret to see that the splendid Capercaillie in the Natural History Museum at South Kensington is mounted holding its feet drawn up in front. It is very curious that many sportsmen, when asked how Game-birds carry their legs, are not able to give a prompt answer or give the wrong one, for it is easily to be seen when shooting, if the neighbouring gun wounds a bird, how the legs drop down from behind. This I have frequently observed during the present season near Tring, and Mr. Walter Rothschild assures me that he has also noticed the same fact more than once. Mr. Ogilvie Grant also agrees with me, and tells me that he wrote to that effect some years ago in 'The Field.' Again, Mr. J. G. Millais has observed the same fact in the Capercaillie, and has asserted its truth in his splendid book on British Tetraonidæ (p. 8) *.

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* [On this subject see also letters from Mr. Barrett-Hamilton and Mr. Meade-Waldo, below, pp. 166, 167.—Edd.]

XII.—*Bulletin of the British Ornithologists' Club.*

Nos. XX. & XXI.

No. XX. (Oct. 31st, 1894.)

The nineteenth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 24th of October, 1894.

Chairman: HENRY SEEBOHM.

Members present:—W. E. DE WINTON, E. HARGITT, A. P. LOYD, F. MENTEITH OGILVIE, W. R. OGILVIE-GRANT, DIGBY PIGOTT, C.B., Count SALVADORI, HENRY SEEBOHM, R. BOWDLER SHARPE, G. E. SHELLEY, W. B. TEGETMEIER, H. T. WHARTON, JOHNSON WILKINSON, C. A. WRIGHT.

Visitors: C. E. FAGAN, C. B. RICKETT.

The CHAIRMAN announced that, owing to domestic bereavement, Dr. Sclater was unable to attend the Meeting, and that his Annual Address to the B.O.C. would be postponed to the next Meeting, in November.

Count SALVADORI made some remarks on the Ducks of the genera *Anas* and *Nyroca*, the following being apparently new to science:—

ANAS OUSTALETI, sp. n.

Similis *A. superciliosæ*, sed speculo alari cæruleo-purpureo paullum viridi nitente, tæniâ albâ ante-speculari distinguenda.

Hab. in insulis Mariannis. Typus in Museo Parisiensi.

NYROCA INNOTATA, sp. n.

Similis *N. leucophthalmæ*, sed capitis, colli, pectorisque colore castaneo valdè saturatiore: torque collari fusco nullo, et maculâ mentali albâ deficiente, distinguenda.

Hab. in insulâ Madagascar dictâ. Typus in Museo Britannico.

Mr. W. R. OGILVIE-GRANT exhibited a series of specimens of the birds collected by Mr. John Whitehead in the mountains of Northern Luzon. Two species appeared to be undescribed:—

ORIOLUS ISABELLÆ, sp. n.

♀. Similis *O. albilori*, sed major, loris mentoque flavis, et rostro brunnescenti-nigro distinguendus. Long. tot. 8·8 poll., alæ 4·4, caudæ 3·6 (in *O. albilori* 2·9).

ZOSTERORNIS STRIATUS, sp. n.

Similis *Z. whiteheadi*, sed gastræo toto nigro distincte striolato, sicut in genere '*Mixornis*' dicto, distinguenda. Long. tot. 5·5 poll., alæ 2·4, caudæ 2·05.

Dr. R. BOWDLER SHARPE exhibited the type of *Micropus nehrkorni*, W. Blasius (J. f. O. 1890, p. 147), which had been sent by Herr Nehrkorn to Dr. Sclater for identification (*cf.* Ibis, 1894, p. 569). Dr. Sharpe had omitted this species from the list of species of *Micropus* given by him in 'The Ibis' for 1894, p. 422, and was much obliged to Herr Nehrkorn for sending the specimen to England.

On examination *Micropus nehrkorni* proved to be not a Bulbul, but a representative species in Mindanao of *Melaniparus semilarvatus*, Salvad., of Luzon. It must therefore be known as *Melaniparus nehrkorni* (W. Blasius). The resemblance to *Micropus melanoleucus* was very striking, but the longer bill, more prominent rictal bristles, ovate nostril, and feebler feet distinguished the *Micropus*, while the rounded nostril, covered with feathers, and the powerful feet identified *Melaniparus* as a member of the family Paridæ, though aberrant in its general appearance. *M. nehrkorni* differed from *M. semilarvatus* in its narrower white frontal band, white speculum at the base of the primaries, and white under wing-coverts and axillaries.

Mr. SEEBOHM exhibited specimens of *Merula thomassoni* from the mountains of Northern Luzon (*cf.* Bull. B. O. C. iii. p. li), and pointed out the close affinity of the species to *M. papuensis*, De Vis, from the mountains of S.E. New Guinea.

Dr. BOWDLER SHARPE made some remarks on the species of Birds of Paradise of the genus *Diphyllodes*, of which he recognized the following :—

1. *D. magnifica* (Penn.). N.W. New Guinea (Sorong; Salawati).
2. *D. seleucides*, Less. N.W. New Guinea (Arfak Mts.).
3. *D. chrysoptera*, Gould (*D. jobiensis*, Meyer).
4. *D. septentrionalis*, Meyer. Finisterre Mts.
5. *D. hunsteini*, Meyer. Astrolabe Mts.

The Arfak bird, of which he had recently seen upwards of one hundred examples, was an intermediate form between the pale ochre-winged *D. magnifica* and the golden-winged *D. chrysoptera*. *D. septentrionalis* was barely separable from *D. hunsteini*, but had the deep crimson mantle-patch of *D. chrysoptera*, while the birds from S.E. New Guinea had the mantle-patch of a lighter crimson. *D. hunsteini*, Meyer, with a richer golden-orange tint on the wings, was believed by Dr. Sharpe to be merely a very old and brightly coloured plumage of the ordinary Golden-winged Bird of Paradise from the mountain-ranges of S.E. New Guinea. The large series of skins of *D. seleucides* from the Arfak Mountains showed the increasing richness in coloration of these golden-winged species of *Diphyllodes*, in proportion to their age.

Dr. SHARPE also pointed out that the species of Plover of the genus *Defilippia* from Nyasa Land and the Zambesi region was distinct from *Defilippia crassirostris* of Equatorial Africa. He separated it as

DEFILIPPIA BURROWSII, sp. n.

Similis *D. crassirostri*, sed secundariis purè albis, et capitis nigredine magis extenso, facilè distinguenda.

Hab. in terrâ Nyasensi.

Dr. SHARPE also made some remarks on the Grebes of the genus *Tachybaptes*, and pointed out that four distinct species had been confounded under the heading of *T. minor*. Of these the African bird had received the "nomen nudum" of *Podiceps capensis* from Bonaparte, which Dr. Sharpe proposed to adopt.

TACHYBAPTES CAPENSIS, sp. n.

Similis *T. minori*, sed abdomine sericeo-albo, minimè nigro, et colli lateralis colore castaneo usque ad oculum posticum extenso facilè distinguendus.

Hab. in regione Ethiopicâ totâ.

TACHYBAPTES ALBIPENNIS, sp. n.

Similis *T. minori*, sed colli lateralis colore castaneo usque ad oculum posticum extenso, secundariis purè albis, rhachidibusque earum quoque albis, distinguendus.

Hab. in subregione Indicâ peninsulari.

Mr. TEGETMEIER exhibited a curious grey variety of the Common Partridge (*Perdix perdix*) and some feathers of an Ostrich (sp. inc.), at present living in the Zoological Society's Gardens.

No. XXI. (Nov. 30th, 1894.)

THE twentieth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 21st of November, 1894.

Chairman: P. L. SCLATER, F.R.S.

Members present:—E. BIDWELL, F. E. BLAAUW, P. CROWLEY, W. E. DE WINTON, Major A. P. LOYD, Dr. ST. G. MIVART, F.R.S., E. NEALE, F. MENTEITH OGILVIE, W. R. OGILVIE-GRANT, E. C. PEARSON, J. J. PEARSON, T. DIGBY PIGOTT, C.B., HOWARD SAUNDERS (*Treasurer*), W. L. SCLATER, HENRY SEEBOHM, R. BOWDLER SHARPE (*Editor*), W. B. TEGETMEIER, AUBYN TREVOR-BATTYE, H. T. WHARTON, JOHNSON WILKINSON, C. A. WRIGHT.

Visitors: E. A. S. ELLIOT, C. E. FAGAN, H. H. JOHNSTON, C.B., R. I. POCOCK, C. B. RICKETT.

On the motion of Dr. R. BOWDLER SHARPE, it was unanimously Resolved:

> "That the best thanks of the B. O. C. be offered to Mr. J. P. GASSIOT, F.Z.S., for his handsome contribution

of £25 towards the expenses of the production of Vol. II. of the 'Bulletin of the British Ornithologists' Club,' and that a complete copy of the three volumes of the 'Bulletin' be presented to him."

The Chairman read the following Address to the Club:—

My remarks on opening the Third Session of the B. O. C. have been unavoidably postponed until the present Meeting; but I now propose to address to you a few words on some of the recent events in Ornithology.

Section I. New Discoveries.

More than forty years ago, as I well recollect, my former friend and master in Ornithology, Hugh Strickland, used to complain how hard it was to find a bird really new to Science. Strickland had no idea of the enormous number of new species and new forms, some of them of the most extraordinary character, which would be constantly discovered and described year by year after that period. At the present epoch it must be allowed that, in the two great Northern Regions of the earth's surface, there remains little more to be done in the way of discovery of new species. But in the Oriental, Australian, Ethiopian, and Neotropical Regions, as fast as new localities are visited, new forms of avian life still continue to present themselves. For example, Mr. Whitehead's researches in the highlands of the Philippines, and Mr. Everett's labours in the Natuna Islands alike show that the ornithological riches of the Oriental Region are by no means exhausted. In Australia proper, perhaps, little more in the way of novelty is to be expected, but in the Papuan Subregion the already rich Ornis is still receiving most remarkable additions as new areas are explored. Within the past few months two new forms of Paradise-birds, both referable to new genera *, besides many other very interesting new species, have come to light; and I

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* *Loria*, Salvad. (Ibis, 1894, p. 564), and *Lamprothorax*, Meyer, Abhandl. k. zool. Mus. Dresd. iv. no. 2.

am told by Mr. De Vis that Sir William Macgregor has discovered a third new Paradise-bird.

As regards Africa, I need only call attention to the collections made under the directions of Mr. H. H. Johnston, C.B., by Mr. Alexander Whyte in Nyasa-land, and described in 'The Ibis' by Capt. Shelley. Our German fellow-workers are also constantly engaged in characterizing new species from both the Eastern and the Western German territories in Tropical Africa. Passing across the Atlantic to South America we might well suppose that the stream of novelties which has flowed from the Neotropical Region abundantly for so many years, was now likely to stop. But the collection recently received by Mr. Salvin from Mr. Baron shows that even in Peru, which has been so fully explored by the collectors of Warsaw, this is not the case. Mr. Salvin tells me that Mr. Baron's recent collection (of which he will shortly write in 'Novitates Zoologicæ') contains examples of no fewer than 14 new species. Mr. Garlepp's collections from Bolivia, which are submitted to the experienced scrutiny of Graf von Berlepsch, also often comprise examples of new and remarkable species. There is likewise still much to be done in Tucuman and in the adjoining northern provinces of Argentina, whence Herr Paul Neumann has lately sent a most interesting series of specimens to the Berlin Museum (*cf.* Bull. B. O. C. iii. p. xlv). It is plain, therefore, that we may still look forward for many years to the great pleasure of discovering, describing, and figuring new species in 'The Ibis' and in our 'Bulletin.'

Section II. ORNITHOLOGICAL WORKS IN PROGRESS AND PROMISED.

As regards Ornithological books, there has seldom, if ever, I think, been a time when so many new ones have been in progress and in preparation. For England alone, besides Lord Lilford's 'Coloured Figures of British Birds,' we have Dr. Sharpe's 'Handbook' in the 'Naturalist's Library,' and Wyatt's 'British Birds'; and Mr. Dresser has now announced the speedy appearance of his long promised Supplement to the 'Birds of Europe.' Two important works, which, however, are making somewhat slower progress — Menzbier's 'Ornithologie du Turkestan' and Pleske's 'Ornithographia Rossica' — are likewise being issued in Russia. To illustrate the Ornis, until recently so little known, of the Hawaiian archipelago, we have two splendidly illustrated works both approaching completion; I need hardly say I refer to Messrs. Wilson and Evans's 'Aves Hawaiienses,' and to Mr. Rothschild's 'Avifauna of Laysan;' both of them productions creditable alike to British science and to British art.

In Monographs the list is perhaps not quite so long as usual, but Dr. Sharpe's 'Paradise-birds,' Mr. Elliot's 'Pittas,' and Mr. Butler's 'Foreign Finches' are alike in process of issue, while Messrs. Sharpe and Wyatt have just brought to a completion their 'Monograph of the Hirundinidæ' and our friend Heer F. E. Blaauw is working hard at an illustrated volume on the Cranes.

I must also not omit to hope for a speedy completion of Messrs. Newton and Gadow's 'Dictionary of Birds,' which, as we must all be aware, when brought to a conclusion, will be of material assistance to the working ornithologist.

Section III. THE GREAT 'CATALOGUE OF BIRDS.'

Since the opening of our last Session the 22nd volume of the 'British Museum Catalogue of Birds,' containing the Game Birds, by Mr. W. R. Ogilvie-Grant, and the 23rd volume, containing the Rails, Cranes, and Bustards, by Dr. Bowdler Sharpe, have been published. From the last Parliamentary Report of the British Museum we learn that vol. xxiv. of this important work will contain the Waders, by Dr. Sharpe; vol. xxv. the Gulls and Petrels, by Mr. H. Saunders and Mr. O. Salvin; vol. xxvi. the Divers, Pelicans, Cormorants, and Herons, by Dr. Sharpe; and vol. xxvii. the Geese, Ducks, and the remainder of the Class of Birds, by Count T. Salvadori. Thus, as these naturalists are all, I believe, busily engaged on the compilation of their respective tasks, we may look forward to the completion of this arduous undertaking within a definite period—say, two or three years from the present time.

The point I wish now to impress upon my brother ornithologists is the great importance and advantage of an index volume to close the series. It has been suggested, I am told, that an index of the genera would be sufficient. An index of genera would be, no doubt, most useful—in fact, I have had such an index of the volumes already issued prepared for my own use; and very handy indeed do I find it. But to this should certainly be added a second index to all the specific names referred to in the twenty-seven volumes of the work. Such an addition would no doubt be somewhat bulky, as I find that the average number of pages taken up with the index of each volume is about 22, which multiplied by 27 would make a volume of nearly 600 pages for the final Index:—

Average number of pages of Index in the 23 published volumes of B.M. Cat. Birds	22
Total number of pages of Index in the whole 27 volumes	594

But there can be no doubt that such an index would be of surpassing value to the working ornithologist; and as it might be easily compiled from the indexes already published, the labour of making it would not be serious. Still more complete and still more useful would such an index be, if, after the final volume of the Catalogue, an additional volume were prepared in which all the names of species described since 1874 (when the Catalogue was commenced), and not already recorded in the different volumes, were enrolled, with references to each of them. If this additional volume were also indexed in the 'General Index' the result would be a work of reference to the class of Birds much more complete and of far greater general usefulness than the late G. R. Gray's celebrated 'Hand-list of Birds,' issued some twenty-four years ago, and still used by a large number of ornithologists for purposes of reference.

Section IV. FUTURE EXPLORATIONS SUGGESTED.

In concluding my remarks, I will venture to offer some few words of advice to the Members of the B. O. C., or other ornithologists, who may be seeking for places to which to make future excursions.

Although there is not much left that is new in the Palæarctic Region, there is one not far distant part of it of which we as yet know little ornithologically. I allude to the interior of Asiatic Turkey, particularly the Upper Euphrates, where birds are stated by several recent travellers to be abundant. The route to the Persian Gulf, and so up to Bagdad by steamer, is now easy, and the start should be from that quarter in the early spring, when the climate is good. The Euphrates might then be followed to its sources, or so far to the north as convenient, the return home being made by the Mediterranean. An insight would thus be obtained to the ornithology of Mesopotamia, of which as yet nothing, I may say, is known. Many interesting links, no doubt, would be found there between the birds of Persia and those of Syria and Palestine.

An ornithologist who wished to spend his winter in the West Indies could not do better than visit the Island of Margarita, off the coast of Venezuela, which, as a recent traveller informs us, is a healthy place, easy of access, and well provided with birds. It is very desirable to know whether this island, like Curaçao and its satellites (*cf.* Hartert, Ibis, 1893, p. 289), possesses any traces of West-Indian forms or is purely Venezuelan in character. In either case it would be well worth a collector's visit.

A more adventurous explorer, who did not fear Africa, might be counselled to visit the Upper Senegal River and the elevated land between that and the Upper Niger, over which the *pax Gallica* is now said to prevail. This country is now of easy access by steamer and railway. Of the birds of Senegal we know nothing since the days of Swainson, excepting the collections made for the Maison Verreaux, and a few scattered details; for Dr. Rochebrune's work ('Faune de la Sénégambie') is universally admitted to be utterly untrustworthy.

Mr. Sclater exhibited eggs of two species of Macaw, *Ara militaris* and *A. ararauna*, which had been laid in the aviaries of Mr. H. H. Sharland, F.Z.S., at La Fontaine, Tours, the former in June 1890 and the latter in July 1894. They were pure white and of the usual glossy texture of other eggs of the Psittacidæ.

Mr. Sclater exhibited a skin of Wilson's Phalarope (*Phalaropus wilsoni*), belonging to a collection of skins which had been recently received from the Falkland Islands by the University College Museum, Dundee, and had been kindly submitted to him for examination by Prof. d'Arcy Thompson. This was the first record of the occurrence of this bird in the Falkland Islands, although it had been met with by Durnford in 1876 as far south as the Chupat Valley in Patagonia (Scl. & Huds. Arg. Orn. ii. p. 281), and was also known to occur in Chili.

Mr. J. J. Pearson exhibited an egg-blowing apparatus, with which he had obtained the best results during his recent visit to Iceland.

Dr. A. B. Meyer, of Dresden, sent the following descriptions of a new Parrot and a new Bird of Paradise, which he intended to describe in detail and to figure elsewhere:—

Microglossus salvadorii, sp. n.

Fœm.? Formâ *M. aterrimi* (Gm.), sed primulaceo-flavus: subtùs angustè, suprà latè nigro fasciatus: alis et caudâ reliquâ plus minusve nigro irroratis: capite cristâque viridi-atris, irregulariter fasciatim pallidissimè flavo signatis et maculatis: maxilla fusca, apice pallido, mandibulâ albescente: pedibus nigris. Long. tot. c. 550 millim., al. 370, caud. 275, crist. 130, rostr. culm. c. 75, max. alt. 40, mand. alt. 36, max. lat. ad bas. 26, mand. lat. ad bas. 36, tars. 20.

Hab. Nova Guinea, in montibus Arfak.

Parotia carolæ, sp. n.

Mas. Similis *P. sexpenni* (Bodd.), sed multo minor et ab eâ præterea pileo regioneque periophthalmicâ nitidè saturatè ochraceo-aureis, laterum plumis elongatis, albis, internis castaneis vel nigris, et gulæ plumis piliformibus nitidè ochraceis, facilè distinguenda. Long. tot. c. 270 millim., al. 150, caud. 75, capitis rhachid. vexill. 110 (in *P. sexpenni* 170), rostr. culm. 19, tars. 46.

Hab. Nova Guinea, in montibus ad flumen Amberno.

Mr. HENRY SEEBOHM exhibited skins of two new species of birds from the interior of Formosa, collected by Mr. Holst. The first was a Tit of the subgenus *Machlolophus*, which he proposed to call

PARUS HOLSTI, sp. n.

Pileo cristato tergoque viridescenti-nigris: macula nuchali alba: gastræo toto lætissimè flavo.

The second was a Rail, which he named

RALLINA FORMOSANA, sp. n.

Similis, ut videtur, *R. sepiario*, Stegn., sed multò minor: pileo dorso concolore (an jr. ?), *R. euryzonoidi* jr. similis, sed valdè saturatior.

A full description of these species will appear in 'The Ibis.'

Dr. BOWDLER SHARPE stated that he had since discovered that the Plover described by him as *Defilippia burrowsii* (above, p. 138) was the *Vanellus leucopterus* of Reichenow (J. f. O. 1889, p. 265), and the species must therefore be known as *Defilippia leucoptera* (Reichen.).

Mr. A. TREVOR-BATTYE, who had landed in England on the previous evening, received a cordial welcome from his brother members. He gave an interesting account of his explorations in the Island of Kolguev and of his subsequent journey to the Petchora and Archangel.

XIII.—*Notices of recent Ornithological Publications.*

1. *Bendire on new Birds from Aldabra Island.*

[Description of Nests and Eggs of some new Birds, collected on the Island of Aldabra, North-west of Madagascar, by Dr. W. L. Abbott. Proc. U.S. Nat. Mus. xvii. p. 39.]

Dr. W. L. Abbott, well known for his researches in the

Kilimanjaro district of Africa, also visited the Aldabra group, N.W. of Madagascar, and obtained a collection of birds and eggs. Mr. Ridgway has already characterized the new birds. Mr. Bendire now describes the eggs of four species.

2. *Berezowski and Bianchi on the Birds of Kansu.*

[Aves Expeditionis Potanini per provinciam Gan-su et confinia, 1884–87. Auctt. M. Berezowski et V. Bianchi. St. Petersburg, 1891.]

The text of this article, with the exception of the scientific names, being in Russian, we regret not being able to say much about it. It is, however, evidently an account of the birds collected by MM. Berezowski and Bianchi during their travels in the great northern Chinese province of Kan-su and its vicinity, in 1884 and the three following years.

The list of species of which representatives were obtained is 267 in number. The following six species are described as new:—*Trochalopteron sukatschewi, Suthora przewalskii, Larvivora obscura, Pœcile hypermelæna, P. davidi*, and *Sitta przewalskii*. The following species are figured in nicely executed coloured plates:—*Trochalopteron sukatschewi, Larvivora obscura, Suthora przewalskii, Pœcile hypermelæna, P. davidi, Parus venustulus, Carpodacus trifasciatus*, and *C. stoliczkæ*.

3. *Briggs on the Birds of North Ronaldshay.*

[Some further Bird Notes from North Ronaldshay. By Allan Briggs. Ann. Scottish Nat. Hist. 1894, p. 82.]

Mr. Briggs gives a series of field-notes on the birds observed in North Ronaldshay, the most northern of the Orkney Islands, in 1893. The first Nightjar ever seen there by the author was observed on June 4th. A small colony of Sandwich Terns (*Sterna cantiaca*) nested in Ronaldshay among the Black-headed Gulls in 1893, the first time this species has been known to breed in the group.

4. *Buller on Birds observed on voyages to and from New Zealand.*

[On the Birds observed during a Voyage from New Zealand to England. By Sir W. L. Buller, K.C.M.G., F.R.S., &c. Trans. N. Z. Inst. 1893, p. 182.—Notes made on the Return Voyage from Plymouth to New Zealand. *Op. cit.* p. 189.]

These articles contain a series of chatty notes relating principally to the oceanic birds observed during a voyage home from New Zealand round Cape Horn, and on the return voyage by the Cape of Good Hope. An individual of the Great White Albatross (*Diomedea regia*) is stated to have accompanied the vessel, at intervals, for 970 miles (in a straight line) during the first voyage. The Grey Petrel (*Adamastor cinereus*) was numerous in the extreme southern portion of the track, and the Giant Petrel (*Ossifraga gigantea*) appeared near the island of Diego Ramirez. The general poverty of bird-life in the South Atlantic was very observable.

On the return voyage birds became very numerous on approaching the Cape. A species of small Albatross, Penguins (*Spheniscus demersus*), Shags, Petrels, and Boobies were plentiful, and there was an astonishing number of Gannets. After passing the Cape the Sooty Albatross was constantly seen. The Giant Petrel appeared near Kerguelen's Land. A few days before reaching Hobart the rare *Œstrelata antarctica* was met with.

5. *Chapman (F. M.) on Bird Migration.*

[Remarks on the Origin of Bird Migration. By Frank M. Chapman. Auk, xi. p. 12.

The Nocturnal Migration of Birds. By Frank M. Chapman. Popular Science Monthly, 1894, p. 506.]

As regards the origin of the migratory instinct in North-American birds, Mr. Chapman considers that Dr. Allen* has given us "as satisfactory a working hypothesis as we can hope to have." When the refrigeration of the earth at the polar extremities took place, at the close of the Tertiary Epoch, "bird-life must have been crowded thence towards the tropics, and the struggle for life greatly intensified." The less yielding forms became extinct, those less sensitive sought to extend their range by a removal northwards in summer, only to be forced back by the recurrence of winter. This incipient change of locality, according to the seasons, extended itself and became habitual, "and through the heredity of habit gave rise to that wonderful faculty which we term the instinct of migration." To this theory Mr. Chapman wishes to add a few words concerning "the influences which may have aided climatic conditions in establishing the habit of migration." These influences are, if we rightly understand Mr. Chapman, "the instinctive desire for seclusion during the period of reproduction," which drives birds northwards in spring, and the "failure of the food-supply," which leads them to desert their breeding-grounds on the approach of winter and to return south again.

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* "On the Origin of the Instinct of Migration in Birds," Bull. N. O. C. 1880, p. 151.

In his second paper Mr. Chapman gives a popular account of the facts recently ascertained in America as to the migration of birds by night, which undoubtedly takes place, whether the phenomenon be habitual or abnormal. On Sept. 26th, 1891, it was his "good fortune" to pass the night in company with other ornithologists at the Bartholdi Statue at the mouth of the Hudson-River valley, in order to witness the migration. The first bird entered the area illuminated by the torch on the Statue at 8 P.M. During the next two hours birds were constantly heard and many were seen. About 10 o'clock, when a light rain began, there were hundreds of arrivals, and the "air was filled with the calls and chirps of the passing host." The ornithologists then ascended to the torch, and remained for two hours, during which thousands of birds passed within sight. At daybreak a few stragglers were still to be seen winging their way southward.

Mr. Chapman describes the following ingenious mode of observing the nocturnal migrants by a telescope. A comparatively low-power glass is focussed on the full moon during the season of migration, and the birds are watched while crossing the field of vision. In this way on one occasion, during three hours' observation, no less than 264 birds were seen. Under proper focal conditions marked characters of flight and form render it possible to recognize even the species. Thus Ducks, Snipes, and Rails were distinguished with certainty.

6. *Festa on the Birds of Palestine and Syria.*

[Viaggio del Dr. E. Festa in Palestina, nel Libano e regioni vicine. Del Dott. Enrico Festa. Boll. Mus. Zool. ed Anat. Comp. R. Univ. d. Torino. IX. No. 172: Parte narrativa. No. 174: Uccelli.]

We have read Dr. Festa's narrative of his zoological expedition to Palestine and Syria in 1893 with great interest. The author reached Jaffa on March 12th, and proceeded to Jerusalem by road, whence his first excursion was to the convent of Mar-Saba. In the orange-gardens of Jaffa the Syrian Bulbul (*Pycnonotus xanthopygus*) was abundant, and Tristram's Grakle (*Amydrus tristrami*) delighted his eyes at Mar-Saba. In the ravine below the convent he also met with *Cercomela melanura*, and, strange to say, *Turdus musicus*.

Dr. Festa remained in the Dead Sea district and adjoining country on both sides of the Jordan until the beginning of May, when he returned to Jaffa, and proceeded by steamer to Beyrout. His narrative contains many allusions to birds, amongst which, besides those already mentioned, he met with *Cinnyris oseæ*, *Garrulus atricapillus*, and *Argya squamiceps*. From Beyrout Dr. Festa went into the Lebanon and Anti-Lebanon and on to Damascus, whence he proceeded into the Hauran and so back to Beyrout. A second excursion to the Cedars and Baalbec was made in June and July.

On the Lake of Tiberias, *Ceryle rudis* and *Halcyon smyrnensis* were both observed. *Cypselus affinis* was found nesting in caverns near Ain-et-Tin. *Otocorys penicillata* and *Serinus canonicus* occurred high up on Hermon and in the Lebanon. The beautiful *Erithacus gutturalis* was rare, but was met with on the Lebanon and Anti-Lebanon.

In Dr. Festa's list are enumerated 120 species of birds, all of which seem to have been registered in Tristram's 'Fauna and Flora,' except *Parus cæruleus*, obtained in the woods of the Wady Seir, east of the Jordan. The single specimen brought home was brighter in colouring than European examples.

Two new subspecific names are proposed for Palestine forms—*Petronia stulta puteicola* and *Alauda cristata deserticolor*. Dr. Festa doubts the occurrence of *Cinnyris oseæ* at Beyrout, but he has omitted to notice Dr. Van Dyck's evidence on this subject (Ibis, 1892, p. 469).

7. *Goodchild on the Birds of Swaledale.*

[Some of the Birds observed in Upper Swaledale. By J. G. Goodchild, H.M. Geol. Surv., F.G.S., &c. The Naturalist, 1890, p. 248.]

Mr. Goodchild registers the birds observed in Upper Swaledale, Yorkshire. The Snow-Bunting (*Plectrophenax nivalis*) is a "regular visitant on migration."

8. *Gurney on Female Birds in Male Plumage.*

[On the Partial Assumption by Female Birds of Male Plumage. By J. H. Gurney, F.L.S., F.Z.S. Zoologist, 1894, p. 15.]

In 'The Ibis' for 1888, Mr. Gurney gave a list of 24 species of birds in which one or more instances of a female assuming male plumage had been recorded. Mr. Gurney now publishes an additional list of 9 species, making 33 in all, besides some uncertain cases. This phenomenon, as is well known, is most frequent in the Gallinaceous birds and Anatidæ, but is likewise occasionally met with among the Passeres (Redstart and Red-backed Shrike), also in some Accipitres (for instance, the Kestrel).

9. *Hartert on the Birds of the Natuna Islands.*

[List of the first Collection of Birds from the Natuna Islands. By Ernst Hartert. Novitates Zoologicæ, p. 469.]

The Natuna Islands, as Mr. Rothschild tells us in an introduction to the present paper, extend from Tanjong Api, the N.W. Cape of Borneo, some 190 miles into the Indian Ocean, and are divisible into three groups—the South Natunas, the Great Natunas, and North Natuna or Pulo Laut. The collection now described by Mr. Hartert was formed by Mr. A. Everett on Sirhassen Island in the southern group, in September 1893, and on Bunguran Island, the largest of the Great Natunas, in September and October 1893. The specimens are referred to 66 species, of which *Malacopteron cinereum bungurense, Stachyris natunensis, Mixornis everetti, Graucalus bungurensis,* and *Philentoma dubium* are described as new.

Mr. Hartert concludes that, judging from the present material, the Natunan Ornis is more Malaccan than Bornean, at least five of the species being identical with those of the Malay Peninsula, while representative forms of them are found in Borneo. Moreover, some of the new species are more nearly allied to Malaccan than to Bornean forms.

10. *Hartert on two Species of* Trochalopteron.

[On the Distinctness of *Trochalopterum ellioti*, Verr., and *T. prjevalskii*, Menzb. By Ernst Hartert. Novitates Zoologicæ, i. p. 668.]

Mr. Hartert points out that *Trochalopteron ellioti* of Moupin and *T. prejevalskii* of Gan-su—which have been united by Pleske—are quite distinct species.

11. *Hartert on Eggs from Northern China.*

[On Little-known and Undescribed Eggs from the Kuku-Noor. By Ernst Hartert. Novitates Zoologicæ, i. p. 669.]

Mr. Hartert describes a small series of eggs obtained "in the province of Amdo, only a little east of the Koko-Nor," by a collector employed by Herr Tancré, and received by the Tring Museum. They belong to 15 species, amongst which are such interesting forms as *Chimarrhornis leucocephalus* and *Podoces humilis.*

12. *Hartert on the Eggs of a Swift.*

[Nest and Eggs of *Micropus subfurcatus* (Blyth). By Ernst Hartert. Novitates Zoologicæ, i. p. 674.]

The author describes the nest and eggs of *Micropus* (scr. *Cypselus*) *subfurcatus*, transmitted from Sarawak by Mr. E. Bartlett.

13. *Hartert on two new Venezuelan Birds.*

[On two new Venezuelan Birds. By Ernst Hartert. Novitates Zoologicæ, i. p. 674.]

Two new Venezuelan birds—*Dysithamnus tucuyensis* and *Eupsychortyx mocquerysi*—are described and figured.

14. *Hinxman and Clarke on the Birds of West Ross-shire.*

[A Contribution to the Vertebrate Fauna of West Ross-shire. By Lionel W. Hinxman, B.A., and William Eagle Clarke, F.L.S., &c. Proc. R. Phys. Soc. Edinb. xii. p. 377.]

After an instructive sketch of the physical features of West Ross-shire, the authors give an annotated list of the terrestrial vertebrates of that district. The birds as yet noted are 132, of which 91 are reckoned as breeding species. In West Ross the nest of the Snow-Bunting (*Plectrophenax nivalis*) has not yet been obtained, but fully-fledged young have been observed, and there can be no doubt that the bird breeds on the higher mountains.

15. *Jentink on the Birds of Holland.*

[Muséum d'Histoire Naturelle des Pays-Bas.—Tome XIV. Catalogue systématique de la Collection de feu Mr. J. P. van Wickevoort Crommelin. Par F. A. Jentink. 8vo. Leide, 1894.]

The valuable series of the birds of Holland formed by the late Mr. J. P. van Wickevoort Crommelin (see Ibis, 1892, p. 352) has been presented to the Leyden Museum by his daughter, on condition of its being kept apart from the rest of the Collections. Dr. Jentink now gives us a complete catalogue of the specimens contained in it, which are altogether 1968 in number, with dates and localities recorded for each of them. The result is a catalogue of the birds of Holland which will be most useful to the student of European ornithology.

16. *Le Souëf's Trip to North Queensland.*

[A Trip to North Queensland. By D. Le Souëf. Victorian Naturalist, xi. p. 3.]

Mr. Le Souëf has given the members of the Field Naturalists' Club of Victoria a lively and interesting account of his recent trip to Northern Queensland. The particular object of the expedition was to procure living specimens of the Tree-Kangaroo (*Dendrolagus bennettianus*) and other animals for the Melbourne Zoological Gardens, but special attention was evidently also given to birds and their nests, and much information was obtained on this subject.

Mr. Le Souëf's first halting-place was at Mr. Barnard's Station near Rockhampton, where it was hoped to obtain examples of a rare snake (*Aspidistes melanocephalus*). Although unsuccessful in this, Mr. Le Souëf found a lot of birds nesting, *Podargus strigoides*, *Pachycephala melanura*, and *Psephotus pulcherrimus*. The last-named bores holes into the white ants' mounds, and forms a chamber in the interior for its five white eggs, being the only Australian Parrot with this peculiar habit.

After short stays at Townsville, where *Estrelda bichenovii* and *Cinnyris frenata* were found breeding, and Cooktown, where other good observations were made, Mr. Le Souëf started for Bloomfield, some 30 miles further up the coast, in a cutter, and arrived at Mr. Hislop's Station, Wyalla, about five miles off. Several pages are devoted to the author's notes and discoveries in this district, which appears to offer excellent collecting-ground for the naturalist. The house is placed on rising ground five miles from the sea, "with low-lying, open, forest-land intervening," while high mountain-ranges of scrub mixed with large trees adjoin it at the back. The Scrub-Turkey (*Talegalla lathami*) is plentiful on the range, while the Scrub-Hen (*Megapodius tumulus*) makes its much larger mounds in the coast district. Amongst other rarities the beautiful Pigeon, *Ptilopus superbus*, a Rifle-bird (*Ptilorhis victoriæ*), *Myzomela obscura*, and *Pitta strepitans* were found breeding. *Tanysiptera sylvia* arrives in October, and bores its nest-holes in the termites' mounds, A nest and egg (white) of Spalding's Orthonyx (*Orthonyx spaldingi*) were obtained, and a playing-place of the Tooth-billed Bower-bird (*Scenopæus dentirostris*) was discovered. The Australian Cassowary (*Casuarius australis*) also inhabits these scrubs. Mr. Le Souëf left on his return to Melbourne on Nov. 15th, delighted, as may be well supposed, with his successful expedition and the results.

17. *Le Souëf on some Australian Birds'-eggs.*

[Description of some Australian Birds'-eggs and Nests collected at Bloomfield, near Cooktown, Queensland. By D. Le Souëf. Proc. R. Soc. Victoria, 1894, p. 19.]

In this paper Mr. Le Souëf gives technical descriptions and field-notes on the oological novelties obtained during his Queensland expedition, such as *Mimeta flavo-cinctus*, *Sphecotheres flaviventris*, *Micrœca flavigastra*, and *Ptilorhis victoriæ*. It is of great interest that the Orioles (*Mimetæ*) seem to breed in the society of the Friar-birds (*Tropidorhynchi*), which in some cases they mimic in plumage, and to imitate their nests.

In an appendix to this article, Mr. A. J. Campbell characterizes a Flycatcher of the genus *Arses* procured in Queensland by Mr. Le Souëf as a new species—*Arses terræ-reginæ*—but Mr. Le Souëf (as stated in a letter to the Editors) is now of opinion that it is merely the adult male of *A. kaupi*.

18. *Lucas on the Tongue of the Cape-May Warbler.*

[The Tongue of the Cape-May Warbler. By Frederic A. Lucas. Auk, 1894, p. 141.].

This is a small contribution to a very interesting and important subject. The tongue of the Passeres has not yet been by any means thoroughly examined, and this organ may evidently prove to be of no small importance in the vexed question of the classification of this extensive order. Mr. Lucas describes and figures the tongues of some species of *Dendrœca*, *Glossiptila*, *Acanthorhynchus*, and *Cœreba*, and points out their differences. It appears that the principal character of the so-called genus *Perissoglossa* has originated in error, and that the term may be cancelled. It is shown also that the tongues of *Cœreba cyanea* and *C. cœrulea* are essentially different.

19. *Meyer and Wiglesworth on Birds from the Talaut Islands.*

[Ueber eine erste Sammlung von Vögeln von den Talaut Inseln. Von A. B. Meyer und L. W. Wiglesworth. J. f. O. 1894, p. 237.]

The authors describe a collection of birds (referable to 48 species) received at Dresden from two of the Talaut Islands, Kabruang and Salibabu, between Celebes and the Philippines. The chief island of the group, Karkelong, is, as yet, ornithologically unexplored, and when this desirable object has been accomplished, will, no doubt, throw more light on the alliances of the Talautian avifauna. The following six species and subspecies are described as new:—*Eos histrio talautensis*, *Zeocephus talautensis*, *Hermotimia talautensis*, *Pitta inspeculata*, *Oriolus melanisticus*, and *Carpophaga intermedia*.

20. *North on Nesting-habits of some Australian Birds.*

[Exhibition of, and remarks upon, the Eggs of *Collyriocincla harmonica* and *Cacomantis pallida*. By Alfred J. North. Proc. Linn. Soc. N.S. Wales, ser. 2, viii. p. 436.]

Mr. North, an acute observer of the nesting-habits of Australian birds, points out that if the parasitic Cuckoos of New South Wales deposit their eggs in the nests of *Malurus cyaneus*, before the rightful owner begins to lay, the nest-makers cover it over with a thick layer of nest-material, so as to defeat the object of the intruder. Mr. Hudson has noticed a corresponding habit in the case of *Sisopygis icterophrys* in Argentina (Arg. Orn. i. p. 125).

21. *North on the Parrakeet of Norfolk Island.*

[Notes on the Red-crowned Parrakeet (*Cyanorhamphus cooki*) of Norfolk Island. By Alfred J. North, F.L.S. Proc. Linn. Soc. N. S. Wales, ser. 2, viii. p. 517.]

Mr. North, having procured two authentic specimens of the Parrakeet of Norfolk Island, admits that Count Salvadori was correct in stating (Ibis, 1893, p. 466) that the species is quite different from *C. novæ-zelandiæ*, and that *C. rayneri* is identical with *C. cooki*—the proper name of the Norfolk-Island bird. It would seem that the species of this genus, which formerly inhabited Lord Howe Island, has become extinct.

22. *Ogilvie-Grant on the Changes of Plumage in the Red Grouse.*

[On the Changes of Plumage in the Red Grouse (*Lagopus scoticus*). By W. R. Ogilvie-Grant. Ann. Scottish Nat. Hist. 1894, p. 129.]

We may fairly presume that no living ornithologist knows more about the various plumages of the Red Grouse of Scotland than Mr. Ogilvie-Grant, and that his views are entitled to respect, if not to acquiescence. The results that he has arrived at are as follows:—"The male has no distinct summer-plumage, but has distinct autumn- and winter-plumages, and retains the latter throughout the breeding-season.

"The female has a distinct summer-plumage, which is complete by the end of April or the beginning of May: also a distinct autumn-plumage, which is retained until the following spring.

"To put it more shortly, both male and female have two distinct moults during the year, but in the male they occur in autumn and winter, and in the female in spring and autumn; the former having no distinct spring- and the latter no distinct winter-plumage."

These remarkable facts, which the author believes to be without parallel in ornithology, are fully explained in the present article, and illustrated by useful coloured plates.

23. *Pražák on the Birds of Bohemia.*

[1. Kritische Uebersicht aller bisher in Böhmen nachgewiesenen Vögel. Von J. Prok. Pražák. Mitth. ornith. Ver. in Wien, Jahrg. xviii. pp. 3, 20, 36, 52 (1894).

2. Ornithologische Beobachtungen aus Nord-Ost-Böhmen, 1888–92. Orn. Jahrb. iv. p. 85.

3. Zur Ornis Nord-Ost-Böhmens. *Op. cit.* v. p. 41.
4. Beiträge zur Ornithologie Böhmens. Mitth. orn. Ver. Wien, xvii. p. 177.]

Herr J. Prok. Pražák, who is an old disciple of Fritzsch of Prague, now on the staff of the Imp. N. H. Museum, Vienna, reprints from 'Die Schwalbe' a new list of the birds ascertained to have occurred in Bohemia up to Oct. 1st last year. They are 358 in number. The German names are added and a few critical footnotes. The resident species are indicated by an asterisk.

Herr Pražák has also contributed to the Orn. Jahrb. and other periodicals several articles on the birds of N.E. Bohemia, of which he kindly sends us copies. They will furnish much useful information to students of the European Ornis.

24. *Radde on the Public Museum of Tiflis.*

[Bericht über das Kaukasische Museum und die öffentliche Bibliothek in Tiflis fur das Jahr 1893. 8vo. Tiflis, 1894.]

In this report our excellent correspondent Dr. Radde gives an account of the progress made at the Tiflis Museum under his charge in 1893. Prefaced to this is a short narrative of his summer excursion of 1893, which was devoted to the scientific examination of the eastern coastlands of the Black Sea and the neighbouring ranges from Batum to Anapa. Of this journey, undertaken in company with Herr E. Koenig, a full account has been recently published in the Ergänzungsheft (no. 112) of Petermann's 'Mittheilungen' (1894).

25. *Rey on the European Cuckoo.*

[Altes und Neues aus dem Haushalte des Kuckucks, von Dr. Eugène Rey. Marshall's Zool. Vortrage. Heft xi. 8vo. Leipzig, 1892.]

Dr. Rey's elaborate essay on the economy and habits of the Cuckoo is well worthy of careful study. The author, amongst other particulars, gives a table of 531 Cuckoos' eggs, the results of an examination of which are very curious. With us in England the Hedge-Sparrow, the Meadow-Pipit, and the Pied Wagtail are the commonest foster-parents of the Cuckoo. From Dr. Rey's evidence it would appear that in Germany the Red-backed Shrike, the White Wagtail, and the Redstart are the favourites, as the eggs laid in these birds' nests comprise half of the total number of Cuckoos' eggs which have come under Dr. Rey's notice (24 per cent., 14 per cent., and 12 per cent. respectively). Of the 531 Cuckoos' eggs observed by Dr. Rey, 180 (or 30 per cent.) resemble in colour the eggs of the foster-parent, and, curiously enough, out of 67 Cuckoos' eggs found in Redstarts' nests, 57 were blue. Dr. Rey attempts to arrange the foster-parents of the Cuckoo geographically; but as nearly all his Cuckoo-eggs have been collected in Germany, the statistics of the other countries may be passed over as embracing too few examples to yield a correct average. The following analysis of the German examples of eggs laid, with the species, of which he records more than twenty examples, are interesting :—

Lanius collurio	172	Sylvia cinerea	45
Motacilla alba	155	—— nisoria	34
Sylvia hortensis	103	Ruticilla phœnicurus	25
Troglodytes parvulus	82	Acrocephalus phragmitis	25
Acrocephalus arundinaceus	71	—— palustris	23
Erithacus rubecula	57		

The list of the various foster-parents of the Cuckoo has now reached to 117 species, but in many cases Dr. Rey admits that the evidence is unsatisfactory. It sometimes happens that two and even in some cases three Cuckoo's eggs have been found in one nest. In these cases it is generally found that the two eggs are very different, no doubt being laid by different parents, and in the few cases where they resemble each other it is possible that the similarity may be due to the fact that two different Cuckoos may lay very similar eggs. Dr. Rey admits that the same Cuckoo lays similar eggs year after year.

Cuckoo's eggs have thick shells. In size they are slightly larger than those of the Crested Lark, but not quite so large as those of the Red-backed Shrike; nevertheless, they are 25 per cent. heavier than the former, and 21 per cent. heavier than the latter (weighed after being blown). Dr. Rey gives an interesting formula for Cuckoo's eggs; the length multiplied by the breadth (in millimeters) divided by the weight (in milligrams) varies from 1¼ to 2, by far the greater number of eggs giving a quotient between 1·4 and 1·8.

Dr. Rey is of opinion that the average number of eggs laid by each Cuckoo in a season is about 20, and that they are laid every alternate day, making the total laying-period about 40 days. Statistics of more than a thousand Cuckoos' eggs are given, and an enormous number of facts are thus brought together in this very interesting disquisition.

26. *Rothschild on Albinism in Birds.*

[On Albino Swallows and Wheatears. By the Hon. Walter Rothschild. Novitates Zoologicæ, i. p. 667.]

Mr. Rothschild's remarks refer to the relationship of albinos to each other, and to their occurrence in nests of the same parents for several years together.

27. *Rothschild on* Chalcopsittacus duivenbodei.

[On the Habitat of *Chalcopsittacus duivenbodei*, Dubois. By the Hon. Walter Rothschild. Novitates Zoologicæ, i. p. 677.]

Mr. Rothschild has received a specimen of this rare Lory from near Stephansort, in German New Guinea. The exact locality was previously unknown.

28. *Rothschild and Hartert on a new form of Pigeon.*

[*Salvadorina waigiuensis*, gen. nov. et sp. nov. By the Hon. Walter Rothschild and Ernst Hartert. Novitates Zoologicæ, i. p. 683.]

Salvadorina waigiuensis is a new form of Anatidæ from Waigiou, of somewhat uncertain affinities. A single specimen was received at Tring in a large collection of skins made in North-western New Guinea and the adjacent islands by Heer Bruijn of Ternate.

29. *Schalow on the Oology of the* Ratitæ.

[Beiträge zur Oologie der recenten Ratiten. Von Herman Schalow. J. f. O. 1894, p. 1.]

Herr Schalow gives us in this memoir an excellent *résumé* of the present state of our knowledge of the oology of the Ratitæ. The three forms of *Struthio* seem to be quite distinct as regards the structure of their eggs, and will ultimately, in all probability, be found also to present good differential characters in the birds themselves, though their characters are not yet sufficiently understood, nor have the ranges of the forms been exactly made out. *Apteryx* is unquestionably quite different from the rest of the Ratitæ oologically, and seems to be more nearly allied to the Grallæ.

30. *Schalow on the question whether the German Ornis is worked out.*

[Darf die Erforschung der deutschen Vogelwelt als abgeschlossen betrachtet werden? Vortrag gehalten auf der Jahresversammlung zu Cassel, am 25. September, 1893. Von Herman Schalow. J. f. O. 1894, p. 270.]

This stirring question formed the subject of Herr Schalow's address to the Annual Meeting of the members of the German Ornithologists' Society at Cassel, on September 25th, 1893. It is not difficult to guess that the author answers it decidedly in the negative. In the first place, he points out, a new critical list of German birds, bringing this subject up to the present date, is much required for the use of the student. Then the subspecies require to be distinguished from the species, and various other improvements to be made. We need hardly say that we agree generally with Herr Schalow, but regret that as regards nomenclature the German ornithologists appear more inclined to follow the American school than the views generally held in this country.

31. *Stejneger on a Japanese Reed-Warbler.*

[Notes on a Japanese Species of Reed-Warbler. By Leonhard Stejneger. Proc. U.S. Nat. Mus. xvii. p. 205.]

Mr. Stejneger points out that the Reed-Warbler of Japan, which he named *Locustella hondoensis* in 1893, is identical with *Locustella pleskei* of Taczanowski (P. Z. S. 1889, p. 620), and ought to bear the latter name.

32. *Stone on the Old-World* Rallinæ.

[A Review of the Old-World Rallinæ. By Witmer Stone. Proc. Ac. Nat. Sci. Philad. 1894, p. 130.]

Had Mr. Stone been aware of the approaching issue of the twenty-third volume of the British Museum Catalogue of Birds, we can hardly suppose that he would have published the present paper, which is a cursory review of the established generic and specific names of the Old-World Rallidæ, without going into their characters. In some questions of nomenclature where his views diverge from those of Dr. Sharpe, Mr. Stone is entitled to attention, but he appears to be personally unacquainted with many of the species.

33. *Tait on the Birds of Portugal.*

[Aves do Portugal. Por W. C. Tait. Ann. Scienc. Naturaes, Porto, i. (1894), p. 21.]

Mr. W. C. Tait commences a new memoir on the birds of Portugal, a country of special interest to British ornithologists, in a recent number of the 'Annals of Natural Sciences of Oporto,' with some excellent introductory remarks on previous authorities and on the leading features of the avifauna.

34. *Tschusi zu Schmidhoffen on* Colymbus adamsi *in Austria.*

[Erstes Exemplar des östlichen Eistauchers (*Colymbus glacialis adamsi*, Gray) aus Oesterreich-Ungarn. Von Vict. Ritter v. Tschusi zu Schmidhoffen. Ornith. Jahrb. v. 1894, p. 145.]

The author records the existence in the Museum of Linz, Austria, of a young example of *Colymbus adamsi*, procured in 1840 on the Attersee in Upper Austria, and gives particulars about it.

35. *Verrill on the Birds of Dominica.*

[Notes on the Fauna of the Island of Dominica, British West Indies, with Lists of the Species obtained and observed by G. E. and A. H. Verrill. Trans. Conn. Acad. viii. p. 315 (1892).]

Mr. G. E. Verrill, with his brother Mr. A. H. Verrill, visited Dominica in the spring of 1890, and gives an account of the vertebrates collected and observed in that island in the present paper. The list of birds contains the names of 54 species—"very nearly all the land-birds, but comparatively few of the aquatic species." The species have been identified by Mr. Allen. One of the singularities of Dominican ornithology is the possession of two large and quite distinct species of *Chrysotis*. *C. augusta* is said to be common among the mountains on the windward side of the island, and *C. bouqueti* is found in the same localities, but more rarely. Speaking of the former, Messrs. Verrill say:—

"It was mainly to procure these Imperial Parrots, so seldom seen in collections, that our trip was made to Bass-en-ville, which is a single house in the primeval forest, and only to be reached by one of the worst trails ever travelled, and we have spent a number of months among the Sierra Nevada Mountains. This trip, however, well repaid us for our trouble, as it was there that we took many of our best birds and other specimens; but though Parrots were seen nearly every day, and we were accompanied by Mr. Hennessey Dupigny and another hunter, our united efforts secured but two of these shy birds in the ten days we were there."

As already shown by Mr. Allen ('Auk,' 1891, pp. 217, 317) the *Mimocichla* of Dominica, which Sclater (P. Z. S. 1889, p. 326) could not distinguish from *M. ardesiaca* except as a subspecies, seems to possess greater distinctive characters than were appreciable in Mr. Ramage's two specimens. Messrs. Verrill prefer the name "*verrillorum*" for it to that of *albiventris* previously proposed and ultimately adopted by Mr. Allen. It was "very rare and shy," and only two examples were obtained.

Messrs. Verrill conclude their paper with a complete list of all the birds of Dominica yet known—63 in number.

36. *Waugh and Lataste on Chilian Birds.*

[Quelques Jours de Chasse à Peñaflor durant les Mois de Janvier et de Mars. Par Enrique Waugh et Fernand Lataste. Procès-verb. Soc. Scient. d. Chili, 1894, pl. lxxxiii.]

The authors give field-notes on 36 species of Chilian birds of which examples were obtained at Peñaflor, on the Mapocho, in the months of January and March. The old-fashioned and mostly erroneous nomenclature of Gay is employed instead of James's New Chilian List; and we fear that the names cannot always be relied upon:—for example, the so-called "*Turdus fuscater*," which is resident at Peñaflor is, no doubt, *T. magellanicus*. Other errors are obvious, and M. Lataste should send his specimens home for determination if he cannot distinguish them himself.

87. *Winge on the Birds observed at the Danish Light-stations in* 1893.

[Fuglene ved de danske Fyr i 1893. 11te Aarsberetning om danske Fugle. Ved Herluf Winge. Vidensk. Medd. naturh. Foren. i Kjöbenhavn, 1894, p. 15.]

Mr. Winge's eleventh annual report on the birds met with at the Danish Light-stations is drawn up in his habitually clear and exhaustive manner. Thirty-six stations sent 780 specimens of birds in 1893, which are referred to 56 species. The usual field-notes are given, and an outline map shows the exact position of the various light-houses.

XIV.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed to the Editors, since our last issue:—

Sirs,—With reference to the article "Ornithology at Munich, Stuttgart, Darmstadt, Frankfort, and Cassel," in 'The Ibis' of January last (p. 106), I beg leave to address you a few lines.

The "Zoologisch-zootomische Sammlung" at Munich belongs to the State. It is true there are no official ornithologists attached thereto, but some gentlemen residing at Munich, who are chiefly conversant with Bavarian ornithology (such as the undersigned), would most willingly have undertaken to conduct Mr. Sclater, and have given him all the information at their disposal concerning German and Bavarian birds.

It is certainly to be regretted that the above-named Institute does not employ its own ornithologist, in order to preserve from decay this valuable collection and to supplement it where necessary.

Of skins there are but a limited number. A separate collection of Bavarian birds, unfortunately, does not exist in our Museum; but such a collection, of rare completeness and of great interest, is to be found in the Museum of the "Naturwissenschaftlicher Verein für Schwaben und Neuberg" at Augsburg. In the Museum at Munich I should, however, mention a not unimportant series of varieties of colour and of hybrids, which occupies a separate case.

Mr. Sclater saw at both Stuttgart and at Frankfort a specimen of *Alca impennis*. Munich possesses two more. One of the birds, marked "Island, 1833," formed part of the late Duke of Leuchtenberg's collection. The other is labelled "Eismeer, 1836."

Yours &c.,
C. Parrot, M.D.

München, Klenzestrasse,
Sept. 14, 1894.

Sirs,—Referring to Mr. Ogilvie-Grant's description of a new species of Guinea-fowl in 'The Ibis' for October, I find that I have possessed for two years a fragmentary specimen of the new *Numida reichenowi*, sent me by Mr. C. F. Smith from Mengo, Uganda. I took it to the British Museum, along with my fragments of *Pternistes rufopictus*, but neither Mr. Grant nor I then noted the marked peculiarities of the species. My fragment consists only of head, neck, shoulders, and breast.

Yours &c.,
H. B. Tristram.

October 11, 1894.

Sirs,—I have been much interested in your summary of the present state of our knowledge of the Birds of Antarctica. May I add a note as a small contribution? I possess two skins, one of *Pagodroma nivea* and one of *Chionis alba*, given me by my venerable friend, the late Dr. W. Gunn, R.N., who was surgeon of H.M.S. 'Terror' in the Antarctic Expedition under Sir John Ross. He valued the specimens exceedingly, as he believed them to be the only ones ever procured actually on the Antarctic Continent. He told me that he was the first person who set foot on shore after Sir John Ross, and that as they were walking on the ice he saw the Sheathbill running along the edge and shot it. Shortly afterwards he shot the White Petrel, which was retrieved by the boat. The birds are labelled "H.M.S. 'Terror,' 1842, lat. 78° South." I cannot find any record of the White Sheathbill having been taken further south than lat. 64°.

Yours &c.,

Durham, October 31, 1894. H. B. TRISTRAM.

SIRS,—In September last a variety of the Solitary Pigeon, or "Monte Dove" (*Engyptila chalcauchenia*), almost white, was brought by a peon to a friend of mine residing in the Department of Flores in the Banda Oriental. I believe that "white varieties" are not very common among wild Pigeons.

Yours &c.,

Bloxham, Oxon,
November 12, 1894.
O. V. APLIN.

SIRS,—In response to the request for information as to how the birds of prey carry their legs in flight ('Ibis,' 1894, pp. 557 & 558), I venture to inform you that on August 12th last, while walking from Brunswick to Wolfenbüttel, I saw a large Hawk, probably a Goshawk, the legs of which were certainly carried projecting backwards, like those of the Stork. I regret very much that I had no glasses with me, and so was unable to identify the bird with certainty (having never seen *Astur palumbarius* in a wild state before). I watched it, however, for some little time, as on its first appearance at some distance away it had a distinctly Stork-like appearance on the wing, and I was quite unprepared to find this bird carrying its legs in flight in this manner.

Yours &c.,

GERALD E. H. BARRETT-HAMILTON.

Kilmanock, New Ross, Ireland,
October 29, 1894.

Sirs,—With reference to a query in the last number of 'The Ibis,' as to the manner in which birds of prey carry their legs when in flight, I have no hesitation in confirming Mr. Hartert's opinion that the legs are carried stretched out behind under the tail. This is easily seen when Eagles or Falcons flying at hack are soaring over one's head. I have also repeatedly noticed it in tame Kites and Buzzards when living at liberty. In trained Falcons it can most easily be observed, either in a bird waiting on low over head, or in one raking at the lure. In the stoop the legs may plainly be seen to drop from behind at the moment of clutching, and, if successsful in clutching, of trussing the quarry, and to be *again* extended behind when carrying on.

Yours &c.,
E. G. Meade-Waldo.

Rope Hill, Lymington,
October 28, 1894.

Sirs,—Referring to Mr. Blanford's letter in 'The Ibis' for April 1894, regarding the occurrence of *Emberiza schœniclus* and *Circus cyaneus* near Calcutta, I think that as the former specimen was not secured I ought hardly to have included it in my list, though at the time I was satisfied that it was of this species.

Circus cyaneus was named, and wrongly, as I now find, from the wings and legs, as well as a written description, of two birds that I shot; and I am much obliged to Mr. Blanford for having correctly identified them as belonging to *Circus melanoleucus*, a young male and an adult female.

Both *C. cyaneus* and *C. melanoleucus* having the 5th primary notched externally, and the extraordinary difference in the plumage of the sexes of *C. melanoleucus*, have led to the confusion of the two species. The notes, then, that I have made on *C. melanoleucus* ('Ibis,' 1894, p. 62) have reference only to adult males of this species; and those on *C. cyaneus* to females and immature examples of *C. melanoleucus*.

Yours &c.,
Philip W. Munn.

Laverstoke,
November 1, 1894.

Errata in Mr. Rickett's Paper.—Mr. C. B. Rickett wishes to call attention to two errors in nomenclature which occur in his paper on Foochow birds, published in 'The Ibis' for April 1894. The Swallow recorded (page 222) as *Hirundo erythrogastra* should stand as *Hirundo tytleri*, and *Alca umisuzume* (p. 225) should be *Alca antiqua*.

The "Scomber-scomber" *Principle.*—In reference to some remarks on the "*Scomber-scomber*" principle ('Ibis,' 1894, p. 566), a much valued correspondent writes as follows:—

"It has for a long while seemed to me that this so-called principle originated in a printer's error. In the 10th edition of the 'S. N.' Linnæus had '*Scomber Scombrus*'—and in each of the two copies of the 12th edition formerly belonging to him, and now in the possession of the Linnean Society, you will see that the marginal '*Scomber*' is corrected into '*Scombrus*,' by Linnæus's own hand, so far as I can judge.

"Everybody who has had experience of printers knows how apt they are to make a mistake of this kind. They are hard to persuade that two words may be nearly alike and yet intended to differ slightly. It is pretty evident that the printer of the 12th edition, seeing '*Scomber*' in more than one place, thought that '*Scomber*' should stand everywhere, and altered '*Scombrus*' accordingly; but the corrected copies show that this was not Linnæus's intention, and no doubt if he had lived to publish a new edition of the 'S. N.' (for which one of these copies was being corrected) it would have contained '*Scombrus*,' just as the 10th does."—P. L. S.

Tinamous at Washington.—With reference to the Editorial note in 'The Ibis' for July last ('Ibis,' 1894, p. 453) Mr. F. A. Lucas kindly informs us that Tinamous were sold last winter in the market at Washington as "English Partridges," having been brought there from England along with Pheasants and other European game-birds.

The Bird-Collection at Zurich.—Passing through Zurich in September last the writer devoted an hour to the examination of the collection of birds in the Polytechnicum of that city, which is under the care of the Conservator, Dr. Moesch. The specimens, which are all mounted, occupy some twenty cases in a large room, the centre of which is devoted to Mammals. They are much too crowded on the shelves. They have been all determined by Dr. Moesch, and arranged according to the nomenclature and classification of Gray's 'Hand-list,' the names there given as subgenera being employed generically. For instance, *Turdus migratorius* is labelled "*Hodoiporus migratorius.*" There are many good original specimens from Sumatra, South Africa, and the Falklands. Amongst rarer specimens may be noticed examples of *Cyanomyias cœlestis* from the Philippines, *Pilorhinus albirostris* from Abyssinia, *Clytoceyx rex* from New Guinea, and *Agelastes meleagrides* from Liberia. A specimen of *Phalacrocorax pygmæus* is labelled as having been shot near Dietikon, in Canton Zurich, on October 25th, 1856. There is no separate Swiss series.—P. L. S.

Report of the British Museum (*Natural History*) *for* 1894.—The Annual Report of the Trustees of the British Museum reached us too late last year to be noticed in the October number of 'The Ibis.' We now extract from it several paragraphs which will interest the readers of 'The Ibis.'

After a notice of the publication of the twenty-second volume of the 'Catalogue of Birds,' it is announced that the following further volumes are in preparation:—Vol. xxiii. (Rails, Cranes, and Bustards) and vol. xxiv. (Waders), by Dr. R. B. Sharpe; vol. xxv. (Gulls and Petrels), by Mr. H. Saunders and Mr. O. Salvin; vol. xxvi. (Divers, Pelicans, Cormorants, and Herons), by Dr. R. B. Sharpe; and vol. xxvii. (Geese, Ducks, and the remainder of the Birds), by Count T. Salvadori.

As regards the collection of Birds'-eggs we are told that the arrangement of them, which was entrusted to Mr. Seebohm in 1891, has been completed. All the specimens, 46,900 in number, have been named, and have had written upon them references to the locality where (and generally to the date when) they were collected; besides which the names have been entered in a systematic manuscript list. This collection fills 33 cabinets with 30 drawers each, the eggs themselves being placed in glass-topped boxes filled with cotton-wool.

Three new groups of mounted specimens, illustrating the nesting-habits of British Birds, have been completed, namely, those of the Greater Black-backed Gull, the Dotterel, and the Greenfinch. A group of Swifts (*Collocalia fuciphaga*), producers of the so-called "edible Swallow-nests," with their nests attached to the rock, has been added to the general collection. Mr. C. Hose, who collected the materials in one of the celebrated caves in Sarawak, has personally superintended the construction and mounting of this group.

Eleven thousand four hundred and twenty-six specimens of Skins and Eggs have been added to the general collection of Birds during the financial year 1893–4. Of those additions the following are the more important:—

A pair of very fine Ostriches (*Struthio australis*), from Halesowen Farm, Cradock, Cape Colony, purchased; also the skeleton of a female bird from the same locality, presented by Captain W. Hume Middlemass.

Two specimens of the true Prairie Hen Grouse (*Tympanuchus cupido*), from Martha's Vineyard, Massachusetts; purchased.

Fifty-four birds from Suakim; presented by Surgeon-Captain R. H. Penton.

A specimen of a rare Grouse (*Tetraophasis szechenyi*), from Thibet, and one of the Black-necked Crane (*Grus nigricollis*), from Mongolia, both new to the collection; presented by Henry Seebohm, Esq.

A specimen of a Partridge (*Hæmatortyx sanguiniceps*) from Mount Kina Balu; presented by A. H. Everett, Esq.

Eighty-three birds from Mount Kalulong and Baram, in Sarawak; presented by Charles Hose, Esq.

The type-specimens of *Turdinus kalulongæ*, *T. tephrops*, and *Glaucidium borneense*, from Mount Kalulong, in Sarawak, collected by Charles Hose, Esq.; purchased.

Twenty-three specimens from Mount Penrisen and Mount Poeh, in Sarawak, including the types of a new species of Spider-hunter (*Arachnothera everetti*), collected by A. H. Everett, Esq.; purchased.

Fourteen specimens from the Chatham Islands; purchased.

One hundred and nine eggs from Gippsland, Australia; presented by F. A. Philbrick, Esq., Q.C.

Two hundred and twenty-one Birds from Australia; presented by Lord Leigh.

A supposed new Ratite Bird.—At the Meeting of the Zoological Society of London on Nov. 20th, Mr. R. Lydekker exhibited and made remarks on a model and a photograph of a bird's egg from Patagonia, supposed to be the egg of an undescribed species of Ratite bird. Mr. Lydekker describes this mysterious egg at fuller length in the last number of 'Knowledge' (Dec. 1st, 1894), and gives a figure of it from the "only known specimen preserved in the Museum of La Plata." Dr. H. P. Moreno, the Director of that museum, has supplied Mr. Lydekker with the following account of it:—"When exploring, some years ago, in the interior of Patagonia, Dr. Moreno saw numbers of small flightless birds, which he at first took to be young Rheas. Struck, however, by seeing numerous parties of these birds, as well as by the absence among them of any of the ordinary Rheas which might be their parents, he was soon led to discard this view. On asking the Indians by whom he was accompanied whether they knew the birds, Dr. Moreno was informed that they were perfectly familiar with them, and knew them to be a small kind of Rhea. Being, unfortunately, unable to obtain specimens, Dr. Moreno, on his return, asked a friend, who had travelled in the same district, whether he had any knowledge of the birds. The reply was that, not only did he know them well and had often seen them, but that he actually had in his possession an egg which he had picked up. Naturally anxious to obtain such a treasure, Dr. Moreno asked if his friend would present the egg to the Museum—a request which was promptly and gracefully granted. From that time (some ten years ago) till the present day, this priceless and unique specimen has lain undescribed in the La Plata Museum."

Margarita, West Indies.—As there has been some talk of sending a naturalist to Margarita, on the coast of Venezuela, it may be useful to call attention to the interesting narrative of a visit to the Island lately made by Dr. J. F. Chittenden, C.M.Z.S., of Trinidad, who gives a very favourable account of it ('Timehri,' n. s. vii. p. 56) as a health-resort. Riding from Pampotar to Porlamar (the chief port) through the Llanos, Dr. Chittenden says that birds of every variety and in gay plumage were abundant. He never saw so many together out of an aviary. It seems that Margarita is easily accessible from Carúpano, in Venezuela.

Appointments to the Staff of the Field Columbian Museum at Chicago.—We learn from our contemporary 'The Auk' that our friend Mr. D. G. Elliot has been added to the scientific staff of the Field Columbian Museum of Chicago, he having recently been appointed Director of the Department of Zoology; also that Mr. George K. Cherrie, for the last six years connected with the Museo Nacional at San José, Costa Rica, has retired from the service of the Costa-Rican Government, and has accepted the position of Assistant in the Department of Ornithology at the same Museum, of which, as already announced ('Ibis,' 1894, p. 580), Mr. C. B. Cory has recently been made Curator. There can be no doubt that the Field Columbian Museum has thus secured the services of three very able men.

Dr. R. W. Shufeldt's Address.—Our esteemed correspondent Dr. R. W. Shufeldt, we are pleased to learn, has been appointed "Associate in Zoology" at the Smithsonian Institution. His future address will therefore be "Smithsonian Institution, Washington, D.C., U.S.A."

THE IBIS.

SEVENTH SERIES.

No. II. APRIL 1895.

XV.—*On the Ornithology of the Delta of the Rhone.*

By W. Eagle Clarke, F.L.S.

The Delta of the Rhone, not unfrequently called the Camargue, is known to ornithologists, through the works of Jaubert and Barthélemy-Lapommeraye *, and Crespon †, as the haunt of a host of more or less rare and local marsh- and water-birds, including such peculiarly interesting species as the Flamingo, the Ibis, the Purple Gallinule, and Savi's and the Aquatic Warblers.

The reputation of the Camargue ornithologically, its remarkable physical peculiarities, its seclusion, and the fact that so few naturalists had visited its fastnesses, suggested that it might prove a suitable field for investigation, so far as it could be compassed within the short space of a month's leave. Such a little ornithological excursion was undertaken by the writer and his friend Mr. T. G. Laidlaw, M.B.O.U., of Edinburgh, during May 1894, with the results now to be recorded.

This contribution may be said to consist of two sections. In the one is given a short sketch of the physical peculiarities of the various districts of the Delta and their bird-life, while the final portion is devoted to an annotated list of all the species observed in the various localities of the Bouches-du-Rhône visited. During this excursion ornithology received undivided attention, and, by dint of hard work and long hours, our peregrinations extended to all parts of the Delta; the more remote and uninhabited districts of the south receiving special attention.

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* 'Richesses ornithologiques du midi de la France' (1859).

† 'Faune méridionale . . . du midi de la France' (1844).

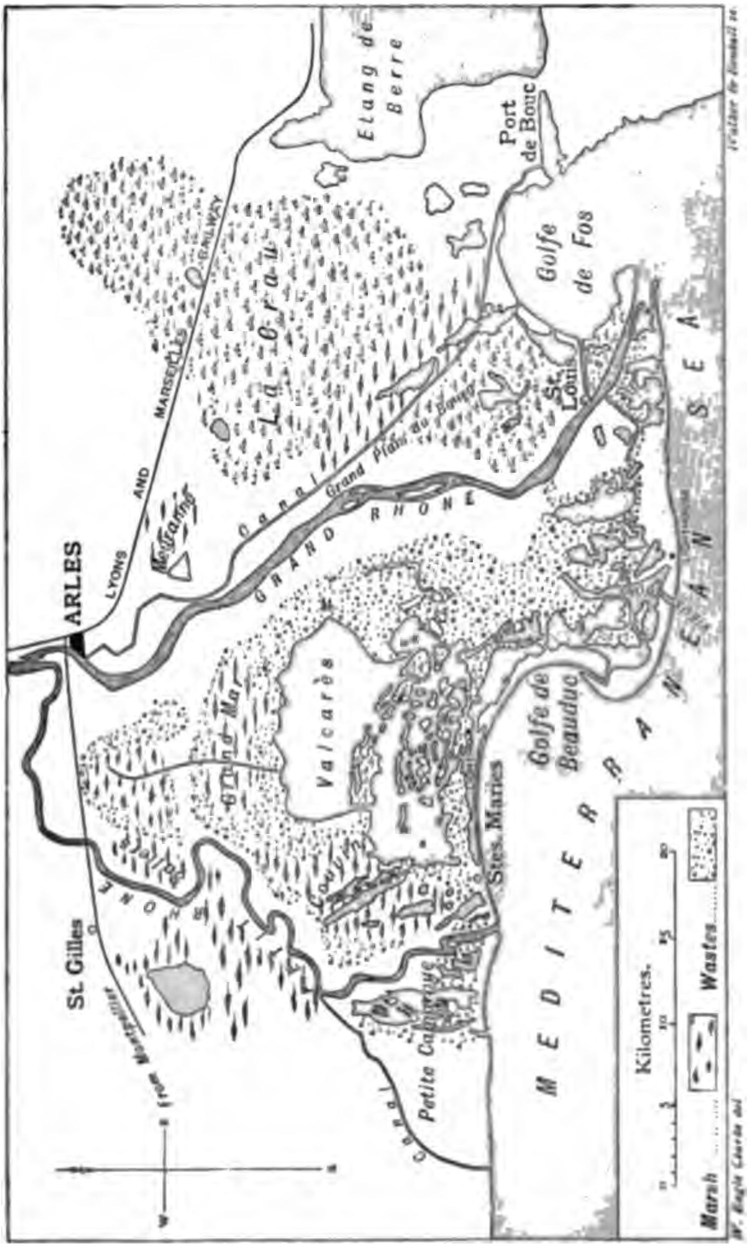
The "Ile de la Camargue" is a vast plain covering an area of nearly 400 square miles. It lies between the two branches of the Rhone and is triangular in form, having the quaint town of Arles at its apex, and the Mediterranean as its base. It is remarkable for the extent of its marshes clothed with forests of reeds; the number of its shallow "étangs" and lagoons; its wide wastes covered with low, salt-loving shrubs; and, in summer, its expanses of sand glittering under a saline efflorescence. The greater part of the region is indeed simply desert; and the similitude is heightened by the ever-present mirage, which shimmers over plain and lagoon, much to the bewilderment of the visitor unacquainted with the geography of the region. It must not, however, be inferred that cultivated areas are entirely absent, for this is not the case. In the north, and also in the east and west, along the banks of the Rhones, the labours of the reclaimer and his elaborate system of irrigation have prevailed. But in the central and southern districts, which form at least two-thirds of the area of the Delta, the ground is so strongly impregnated with salt that its redemption is considered to be hopeless.

The Camargue boasts of one village only, the small fishing community of Saintes Maries in the extreme south-west. In the cultivated districts there are scattered farmsteads; but in the south it is practically uninhabited, there being only two lighthouses, the few lonely "vigies" of the Garde Maritime and Postes des Douanes, and the Saline de Giraud. Saintes Maries, described in 'Murray's Guide' as having "all the appearance of an African town in the desert, and consisting of an old edifice, half fortress, half cathedral, with a few wretched dwellings grouped about it, and as desolate as a necropolis," formed our headquarters. In order to explore ornithologically the south-eastern districts, however, several days were spent at the station of the Garde Maritime in the solitudes of Beauduc. Visits were also paid to the Petite Camargue, and to the marshes and wastes at the mouth of the Grand Rhône, and adjoining the shores of the Golfe de Fos.

The other regions of the Bouches-du-Rhône which are included within the scope of this contribution are the remarkable stony plain known as La Crau, and the neighbourhood of the singularly interesting old town of Arles —the Rome of ancient Gaul.

Before proceeding to give a slight sketch of the various natural districts within the Delta and their characteristic birds, it may be well to remark that the spring of 1894 had been one of the very driest on record in the South of France. Mention is made of this fact because the drought had certainly exercised a marked effect on the lagoon district, causing many sheets of water to disappear, and it *may* have had some influence on the bird-life of the region generally. We do not, however, consider that any material change in the complexion of the ornis of the Camargue, or in the number of the birds frequenting it, had been wrought; and this opinion is based upon the fact that the only district which appeared to be affected by the drought was the lagoon area, whose avifauna is always, and necessarily, extremely limited and peculiar.

The cultivated districts of the Delta, as already remarked, are mainly confined to the north and to the vicinity of the banks of the Rhone, where the land is free from salt. Here vines, rye, and oats flourish; and, on land newly reclaimed, rice is grown as a first crop to purify it. The birds of this section of the Camargue do not require to be particularized, for they are simply the ordinary species which affect similar haunts in South-western Europe. The presence here, and in some numbers too, of the Grey Partridge (*Perdix cinerea*) is worthy of mention, for this bird is not, we believe, usually



MAP OF THE DELTA OF THE RHONE.

found at sea-level in the Mediterranean countries. There is no woodland, worthy the name, in the Camargue, but there are some fine trees in narrow belts, and also scattered trees in some localities in and about the cultivated area. Here, and here only, the Mistle-Thrush, Greenfinch, Tree-Sparrow, Great Titmouse, and Green Woodpecker were observed in the Delta.

The great marshes of the Camargue lie chiefly in the north, centre, and west, and probably cover an area of not less than 50 square miles. They are remarkable not only for their great extent but for the dense growth of reeds, which, owing to the uniform shallowness of their waters, clothes the entire surface of most of them. There is an absence of those open-water spaces which are so attractive to Terns, Gulls, Ducks, and other aquatic species. Thus reed-loving forms alone flourish, but these were found to be neither numerous in species nor in individuals—a circumstance which is not surprising when one reflects upon the vastness of these retreats. No doubt many species escaped detection in these great reed-beds, for no group of birds are more skulking in their nature and more difficult of observation than they; neither is any class of haunt more difficult to traverse or to observe in, nor does any offer such facilities for hiding or escape to the hunted. We traversed miles of these reed-forests and observed the Reed-Warbler and Great Reed-Warbler in numbers, fewer *Cisticola cursitans*, and caught momentary glimpses of several other species—birds that were new to us—which unfortunately afforded no opportunity for identifying them. In the south-west there are extensive reed-beds and much marshy ground fringing shallow étangs of brackish water, and these are the home of the Reed-Warbler, the Bearded Reedling, the Reed-Bunting, the Purple Heron, the Marsh-Harrier, and the Coot. Here, again, were also many small reed-birds whose skulking habits baffled our attempts at their determination.

There appears to be an entire absence in the Camargue of those wooded swamps which form the favourite breeding-sites for colonies of the Ibis and the majority of the Ardeidæ.

Marshy ground with tussocks of sedge, for which the Rallidæ and certain Warblers have so strong a predilection, was likewise absent. In both cases the brackish nature of the water may account for the absence of these particular haunts; and, as bearing upon this, it may perhaps be useful to remark that neither Batrachians nor freshwater species of Mollusca were observed in any of the étangs of the Delta. The almost entire absence of the birds of typical aquatic families named, as well as the marsh-breeding species among the Gulls and Terns, proved a surprising and remarkable feature, and an experience for which we were scarcely prepared.

There may be conveniently included in the marsh region certain shallow étangs in the south-west in which the water, through brackish, was sufficiently congenial for the presence of fishes of the family Cyprinidæ and a few aquatic insects. On their margins and islands is some cover, consisting chiefly of tamarisk trees and shrubs characteristic of the salinity of the ground; and in the water there are patches of thin sedge of stunted growth. These étangs did not appear to have been affected with the drought, and were the chief resorts of the Duck frequenting the Camargue; while the islands were the main breeding-retreats of these birds. Here we found several pairs of Red-crested Pochards nesting—an interesting discovery—and many of the Mallard. And here, too, more than one pair of Pintails were most probably breeding, far to the south of all previous records. These étangs were also frequented by Avocets, Stilts, Redshanks, &c.; and by migratory Ospreys, and waders of many species to which allusion will presently be made. Grebes of any species were conspicuous by their absence—a circumstance which is readily accounted for by the shallowness of the waters, which in étangs covering several square miles were found nowhere to exceed a foot and a half in depth. The marshes of the north are intersected by dykes, on some of whose banks, and also those of the Rhones, bushes and shrubs are to be found, and these harbour *Hypolais polyglotta*, *Cettia cettii*, and other Warblers. Foxes and Marsh-

Harriers flourish exceedingly in the Camargue, for they have no enemies, and they make sad havoc among brooding birds and their young. No ground-nesting bird is safe from the fox, which was observed quartering the ground systematically, during the daytime, on several occasions. On this account many species of birds retire almost entirely to the islands to rear their broods.

In the arid saline region of the south, waste and water reign supreme; and thus it may be conveniently subdivided for our purposes into two sections, namely, lagoons and wastes. These together occupy a broad belt reaching to the Mediterranean, and cover quite one-third of the total area of the Delta, or over 100 square miles.

One of the most singular physical peculiarities of the Camargue is the extraordinary number and nature of the étangs, perhaps more appropriately termed lagoons, which form such a remarkable feature in its geography. They are great shallow pools of clear salt water whose shores are destitute of vegetation of any description. The largest of these lagoons is the Étang du Valcarès, the area of which varies, according to "authorities," from 10 to 30 square miles; but a careful computation, based upon the official map, places it at the happy medium, or about 20 square miles. One of the many peculiarities of these lagoons is their extreme and uniform shallowness. Thus Valcarès is probably nowhere, and at no season, more than 18 inches deep; and at the date of our visit it was not more than six inches, and only one-half its normal area, owing to the extreme dryness of the season. So great, indeed, had been the drought that the lagoons shown on the map as lying immediately to the south of Valcarès, and between that étang and the Mediterranean, were, in May 1894, sandy* deserts, without a blade of vegetation, but sparkling under a white efflorescence of salt, which in a few places was no less than two inches in thickness and pure white in colour. The dreariness of this area of dried-up lagoons was extreme, and scarcely relieved by oases—in wet seasons low flat islets—in the shape of patches of waste with scanty heath-like vegetation. The waters of Valcarès are intensely salt and marvellously clear, and entirely devoid of vegetable life, unless of a microscopic nature. Its animal-life, so far as variety is concerned, is most limited and appeared to be confined to a few eels, and myriads of that tiny crustacean the brine-shrimp (*Artemia salina*), about which we shall have more to say in our notes under the heading of the Flamingo.* The floor of all the lagoons and étangs in the Camargue is wonderfully tough, and possessed of great water-holding qualities; and thus the waters are drawn off almost entirely by evaporation, which is exceedingly rapid under the fierce sunshine of spring and summer. We had evidence of this remarkable water-holding quality of the soil, when after a few hours' heavy rain several étangs were restored to a few days' existence. The Mediterranean, under the influence of strong southerly winds, is driven some miles inland, and also restores for a time some of the contiguous lagoons. In the south-east, in the Beauduc district and vicinity of the Vieux Rhône, many of the étangs adjoining the Mediterranean communicate with the sea; and these are never quite dry, though they vary considerably in the extent of their waters. They, too, are extremely shallow, and are studded with islands.

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* The sand is blown from the shores of the Mediterranean and forms a thin carpet over a floor of particularly tenacious alluvium.

This region of salt lagoons is singularly devoid of bird-life, which is not surprising, since it is not calculated to afford the requirements necessary for the existence and nesting of ordinary aquatic species. Indeed, the only bird which makes its summer home amid this singular wilderness of water is the Flamingo, a species, however, which is in so many ways interesting as to compensate to a considerable degree for this remarkable dearth of feathered inhabitants. The Flamingo, however, is extremely local, for its haunts are practically confined to the Étang du Valcarès, whence it sometimes pays short visits to the lagoons in the south-east. The number of these birds frequenting the Camargue during the spring of 1894 was from 500 to 600 at the most. Several attempts were made at taking an approximate census of the Flamingo-population, but they always failed, owing to the habit the birds had of herding together, or marshalling themselves into an extended line several ranks deep. In the Beauduc district the islands in the étangs are the breeding-grounds of many Common Terns and a few Mallard. These three species, all of them local in their distribution, form the resident summer birds of the great lagoon district of the Camargue.

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* Numerous valves of small specimens of *Cardium edule* are to be found on the shore, but we failed to obtain any containing the mollusc.

The lagoons and their shores are, however, resorted to during the seasons of migration by a multitude of transitory wading-birds; for the Rhone valley is a highway much used by these and many other feathered travellers annually journeying to and from the arctic and tropical regions. During our stay it was our good fortune to see many of these interesting migrants, and we shall have something to say concerning them under the subject of migration, and also when treating of the various species.

The great wastes share with the lagoons the entire southern portion of the Camargue. There are, also, extensive wastes to be found in the north. They form vast level expanses, and much resemble heaths in appearance, being clothed with the salt-loving sea-blite (*Suæda fruticosa*, var. *brevifolia*), which flourishes in varying luxuriance. On those wastes bordering the Mediterranean this plant is much interspersed with shrubs of the glasswort (*Salicornia radicans*).

Bird-life in this desert region, for it is little else, is again very meagrely represented; but there are a few species practically confined to it in the Delta. Thus it was here that we found the pretty little Spectacled Warbler (*Sylvia conspicillata*) and obtained its nest in tufts of the sea-blite. Here, too, that fine Chat, *Saxicola stapazina*, was observed, especially when the waste was contiguous to cultivated land; the Wheatear, to our surprise, was present in small numbers and doubtlessly breeding; and the

Tawny Pipit (*Anthus campestris*) was present in small numbers, but appeared to be confined to the extreme south. In the vicinity of the lagoons the Blue- and Grey-headed Wagtails (*Motacilla flava* and *M. cinereicapilla*) were not uncommon. The commonest "bird of the wilderness" was the Sky-Lark; and we certainly never appreciated this "blithesome and cumberless" species so much as we did during our long, hot, wearisome tramps across these monotonous plains, where it was the only bird of whose presence we were cognizant for hours together. Much less abundant was the Short-toed Lark; while the Thicknee and the Kentish Plover, both thinly distributed, complete the waste-land list. Here and there on the fringe of the wastes, and the lagoons, are to be found patches of tamarisk-trees or scrub; the haunt of many Magpies and Hoopoes, and a few Lesser Grey Shrikes, Turtle-Doves, and Whitethroats.

The wastes, especially those of the central districts, afford pasturage for sheep, and for "taureaux à demi sauvages." Of these latter the visitor to the Camargue will hear much at Arles, and receive some words of caution concerning them. It is undoubtedly extremely dangerous to encounter solitary examples, or individuals separated from the herd, for these invariably "go for" intruders. It was with some misgivings, and only when necessary for the carrying-out of our plans, that we ventured among them; the more so because we had witnessed their fighting qualities, when pitted against Spanish toreadors, in the old Roman arena at Arles.

The Lagoon and Waste regions are much affected by the mirage. Indeed, this phenomenon was never absent in the daytime, and until we had mastered the geography of the country it proved to be a considerable hindrance to our movements; for it not only made it impossible to distinguish land from water, but it hid behind its shimmering veil the very few landmarks the region did possess. Perhaps we may here allude to a small, but, nevertheless, a serious inconvenience to which visitors to the Camargue are subject, namely, the mosquito. This little dipteron is the veritable curse of the region. It exists in myriads everywhere in the south of the Delta, and it is quite useless to endeavour to escape its ever-assiduous attentions. True, we had the orthodox veil, but the choice lay between being smothered—for the heat in the Delta is intense—or bitten, and the mosquito triumphed.

The shores of the Mediterranean, and the sandhills adjoining, do not call for many observations. The former were exceedingly barren ornithologically, and even the Kentish Plover and the Oystercatcher, for both of which they are eminently suited, are not at all common. A few Terns, chiefly the common species, hover over the sea, and Gulls (*Larus cachinnans*) were not uncommon. The hollows among the sandhills are in some places clothed with bushes, and these are frequented by a few common species, chiefly Passerines, none of which are of sufficient importance to mention, but their presence will be duly remarked upon in the annotated list of species.

Several species as Camargue birds appeared to be confined to the immediate vicinity of the Grand and Petit Rhônes. The most interesting, in a way, among these was the Egyptian Vulture, which is common on the margins of the larger river just above the embouchure. The other species not observed elsewhere in the Delta were the Martin and the Sand-Martin.

A visit was paid to the Petite Camargue, or the region adjoining and beyond the west bank of the Petit Rhône and bordering the Mediterranean. This is a remote district and somewhat difficult of access, and it was hoped that it would prove to be interesting ornithologically. It much resembles the waste and lagoon regions of the Camargue, and its bird-life was very similar, but it must be remarked that the Flamingo was absent. A large sandy mound between two almost dry lagoons was covered with well-grown pines, in which several pairs of Carrion-Crows had nests; and in the immediate vicinity several Hobbies were busily pursuing insects on the 19th of May.

The Rhone Valley has long been known as one of the main routes leading to and from the summer and winter homes of a very considerable number of migratory birds. The date of our visit was too late for witnessing the movements of the numerous Passerine and other small birds, but the shores of the lagoons and étangs down to our last day in the Delta—the 31st of May—formed the tarrying-grounds of considerable flocks of migratory waders. No doubt several species must necessarily have escaped our notice, but those observed were the Golden Plover, Grey Plover, Ringed Plover, Dunlin, Little Stint, Curlew Sandpiper, Knot, Sanderling, Redshank, Spotted Redshank, Greenshank, Bar-tailed Godwit, and Whimbrel. In addition to these a Red-backed Shrike and two Ospreys were also noted as migrants.

In connection with the subject of the migration of birds in the Camargue, it may be remarked that there are two lighthouses on the shores of the Mediterranean within the Delta. If observations on the movements of migrants could be obtained from these most advantageously situated watch-towers, it is probable that the value of the data afforded would be equal in importance and interest to those furnished by any other European station. M. Rey, of the Garde Maritime, who showed us extreme kindness during our visit to his lonely station on the shores of the Golfe de Beauduc, informed us that in April "thousands upon thousands" of small birds arrive there, and that his small garden is crowded with them for several days. That extremely rare visitors not unfrequently find their way down the Rhone Valley is manifest from specimens to be found in the fine collection of the birds of Provence in the Marseilles Museum. Here we noted local examples of such interesting strangers as *Turdus dubius*, *T. obscurus*, *T. naumanni*, *T. atrigularis*, *Calliope camtschatkensis*, *Emberiza aureola*, *E. rustica*, *Certhilauda desertorum*, *C. duponti*, *Melanocorypha yeltoniensis*, *Merops ægyptius*, *Surnia funerea*, *Milvus govinda*, *Elanus melanopterus*, *Ardea atricollis*, *Tringa platyrhyncha*, and *Vanellus gregarius*. Other species worthy of notice as having occurred in Southern Europe were *Pinicola enucleator*, *Calcarius lapponicus*, *Picus leuconotus*, &c. This collection is well worth a visit, and deserves far more attention and critical examination than we were able to bestow upon it.

On our way to and from the Camargue a few days were spent in the ancient and interesting town of Arles; and visits were made to the Plaine de la Crau and to Marseilles.

Arles is now a quiet agricultural town, but possesses many remarkable monuments, dating from the commencement of the Christian era, which bear testimony to its former greatness. During our short residence there we made several excursions into the surrounding country, including a couple of visits to the Marais de Meyranne, a great resort for reed-birds, lying a few miles to the south and adjacent to the east bank of the Grand Rhône. One portion of this great marsh was covered with a luxuriant growth of tussocks of sedge, which offered the only likely haunts for the aquatic Rallidæ that we had seen. On the occasion of our first visit we were unprepared to enter this cover, not having our wading-boots with us. On the second we found that the waters, owing to heavy rain, had risen two feet, and we were quite unable to approach the desired goal, which was most probably partially submerged. Such of the birds of the Marais de Meyranne as are worthy of mention have their place in the list which forms the concluding portion of this contribution; the only species that need be specially mentioned here being the Penduline Titmouse—a bird generally considered to be somewhat rare and extremely local in France, which was found to be not uncommon on the wooded margins of the ditches communicating with this marsh.

La Crau is a very remarkable stony plain, 30,000 acres in extent, lying some twelve miles E.S.E. of Arles, and extending in a southerly direction towards the Golfe de Fos and the Étang de Berre. It is the Campi Lapidei of the Romans. So extraordinary is this rough wilderness of stones that it excited the interest of such early writers as Strabo and Æschylus, the latter of whom ascribes to it the site of the great battle between Hercules and the Ligurians, when, after the hero had exhausted his arrows, Zeus rained down stones from heaven to assist his son. Later authorities opine that it owes its existence to the Rhone and the Durance, by whose waters its innumerable stones were deposited. The stones covering this vast area are certainly rounded by the action of water, and they vary in size from the dimensions of a man's head to that of his fist. They are loose, not imbedded, and form a stratum of great thickness. Between the stones there struggle for existence a few thin blades of parched-looking grass. The Crau is a dreary place in the extreme, and most toilsome to traverse. On the 18th of May we covered many miles of its rugged surface, which for roughness can only be compared to the dry bed of a mountain torrent. In the west of the wilderness there is some cultivation. This has been brought about by resort to rather remarkable methods—namely, the bringing of all manner of rubbish from Marseilles, which, after having been weeded of old boots and various tins, &c., is ground up in a mill and then spread over the surface of the stones. By this means, and an elaborate system of irrigation based upon the waters of the Durance, a marked change has been wrought, for good grass and vines now flourish, in strong contrast with their immediate sterile surroundings. The birds haunting this dismal plain are neither numerous in species nor in individuals. We were glad to make the acquaintance here of the Pin-tailed Sand-Grouse (*Pterocles alchata*), but failed to find the Rock-Partridge (*Caccabis saxatilis*), which we were informed is not very uncommon. The other birds observed were a few Short-toed Larks, several Egyptian Vultures, two Harriers, and several Stone-Curlews. Near the centre of the Crau is an oasis and a village, Entressen; also an étang, with deep water and, in places, fringing reeds, where we saw several pairs of Great Crested Grebes, the only birds of this family that came under our notice in the Bouches-du-Rhône.

TURDUS VISCIVORUS, Linn.

Haunts suited for the Mistle-Thrush are few in the Camargue, and confined to the northern districts, where, however, the bird appeared to be far from common. Around Arles it was noticed as fairly abundant.

Turdus merula, Linn.

The Blackbird was not observed anywhere within the Delta, and appeared to be an uncommon bird in the area visited. A single pair only came under our notice, near the east bank of the Grand Rhône.

Saxicola œnanthe (Linn.).

Low-lying country, two or three feet above the sea-level, is scarcely suited to the known requirements of the Wheatear in Southern Europe. Yet several pairs were observed on the wastes adjoining the Mediterranean, and were doubtlessly nesting, since they were seen throughout our visit.

Saxicola stapazina, Vieill.

This beautiful species was thinly scattered over the wastes of the Camargue, especially those fringing the cultivated land of the central and northern districts, but was not observed in the more arid regions to the south. It was found to be an extremely shy species, and never afforded us an opportunity for securing specimens.

Pratincola rubetra (Linn.).

A female, observed on waste land in the south-western portion of the Camargue on the 21st of May, was perhaps a laggard migrant, as the region is considerably to the south of the breeding-area of the Whinchat.

Pratincola rubicola (Linn.).

Two males only came under observation, both in the neighbourhood of Arles.

Daulias luscinia (Linn.).

The Nightingale was extremely abundant in all the districts visited, haunting not only the smallest patches of cover, but even the bushes among the sand-hills bordering the Mediterranean.

Sylvia curruca (Linn.).

This species was not observed in the Camargue, and one seen near Fourques, a little to the north of Arles, was the only Lesser Whitethroat that came under notice.

SYLVIA RUFA (Bodd.).

In several standard works the Whitethroat is stated to become scarce in the Mediterranean region. This is certainly not the case in the Bouches-du-Rhône, where we found it extremely abundant—indeed, nowhere more so. In the Camargue it is generally distributed in suitable localities, and occurs quite down to the sea in the east and west.

SYLVIA CONSPICILLATA, Marm.

The Spectacled Warbler was only observed on the wastes of the southern portion of the Camargue, and those of a similar nature lying between the mouth of the Grand Rhône and the Golfe de Fos. Over this wide area the bird was found to be very thinly scattered. A nest in a shrub of sea-blite was placed about a foot from the ground, was well-concealed, and contained five much-incubated eggs. As opinions seem to differ widely as to the nature of this little Whitethroat, it may be stated that in our experience it was invariably an extremely shy and restless species.

SYLVIA ATRICAPILLA (Linn.).

Not uncommon, though local, in the northern portion of the Camargue. Around Arles, and in the gardens of that town, the Blackcap is quite common.

SYLVIA HORTENSIS, Bechst.

The Garden Warbler was observed locally in the northern districts of the Delta; and was also noted in the Petite Camargue, in shrubs among the sandhills bordering the Mediterranean. It was, however, quite common in the neighbourhood of Arles.

HYPOLAIS POLYGLOTTA (Vieill.).

A common bird in low trees bordering the dykes in the north of the Camargue and around Arles, and also on the banks of the Rhones.

ACROCEPHALUS STREPERUS (Vieill.).

In the Camargue the Reed-Warbler was common in the Marais du Couvin, de Saliers, and de la Grand Mar, and in the Beauduc district in marshes near the Vieux Rhône. It was also very abundant in the Marais de Meyranne, near the east bank of the Grand Rhône.

Acrocephalus turdoides (Meyer).

For some reason which we cannot explain, the Great Reed-Warbler was abundant in the extensive marshes in the north of the Camargue, but appeared to be entirely absent from those of the south-west, though the latter were to all appearance equally suitable as haunts. It was not uncommon among willows on the banks of the Rhones, and was very common in the reeds of the Marais de Meyranne. On the canal near Arles one was observed singing in a poplar tree quite twenty-five feet from the ground.

Locustella nævia (Bodd.).

The Grasshopper Warbler was only noted in some suitable cover near the east bank of the Grand Rhône below Arles.

Cettia cettii (Marm.).

This species was very abundant in the northern portion of the Camargue and in the neighbourhood of Arles, being confined, however, to dense underwood fringing ditches. The very remarkable notes of Cetti's Warbler reminded us more of the alarm-cry of a much-startled bird, rather than partaking of the nature of a song. This impression was further heightened by the fact that on every occasion on which we heard these notes—and they were many—they were uttered only when we approached the bird's haunts and disturbed its seclusion, and then, like a startled Blackbird, it instantly burst out in its so-called song.

Cisticola cursitans (Frankl.).

A local species, which was observed only in the Marais du Couvin, and more abundantly in the Marais de Saliers, where it frequented both the tamarisk-bushes and the reeds, and was shot for identification.

Panurus biarmicus (Linn.).

The Bearded Reedling was found to be a local species, but common where it occurred. In the Camargue we only observed it in the dense reed-beds of the Marais du Couvin, in the south-west; where young able to fly were seen on the 21st of May. It was also an abundant bird in the Marais de Meyranne, a few miles south of Arles.

Jaubert and Barthélemy-Lapommeraye ('Richesses ornithologiques du midi de la France') state that this species is very rare in Provence, seen at long intervals, generally in the Camargue or on the borders of the Rhone.

PARUS MAJOR, Linn.

The Great Titmouse was common in the northern districts of the Delta and in the country around Arles.

ÆGITHALUS PENDULINUS (Linn.).

Jaubert and Barthélemy-Lapommeraye describe this species as being sedentary but rare in Provence. It was, however, found to be fairly abundant on the wooded banks of the dykes between the east bank of the Grand Rhône and Marais de Meyranne. Here we observed a nest suspended from the slender twigs of an elm tree, and which only required the dome to be woven in to render the structure perfect. On visiting this nest ten days later, the birds were found to be still busily engaged in building-operations, and the nest proved on examination to be not yet quite perfect. Thus it seems probable that no less a period than four or five weeks is required for the construction of this most beautiful among the nests of European birds. On both occasions we watched the birds for some time, and they were evidently very industrious, going and coming frequently with their bills filled with silky down of the willow catkin. Young birds able to fly well were observed at the end of May.

CERTHIA FAMILIARIS.

The Creeper only once came under notice, being observed among some trees near to the east bank of the Grand Rhône on the 23rd of May.

MOTACILLA ALBA, Linn.

Several White Wagtails were seen on the Rhone side above Arles on the 11th of May.

Motacilla flava, Linn.

Motacilla cinereicapilla, Savi.

The Yellow Wagtails of the Camargue were two in number, the *M. flava* of Linnæus and the *M. cinereicapilla* of Savi, which latter is regarded as a subspecies of *M. borealis* of Sundevall by Dr. Sharpe (Cat. Birds, x. p. 526). These two species were equally abundant and occupied haunts in common in the southern districts of the Delta. They were observed in pairs down to the end of May, and showed no signs of nesting at that date.

Anthus campestris (Linn.).

In the Camargue this species was entirely confined to the wastes of the extreme south, where it was thinly distributed over ground clothed with the salt-loving *Suæda* and *Salicornia*. A pair were observed on pasture-land adjoining the Golfe de Fos.

Oriolus galbula, Linn.

Only a single specimen of the Golden Oriole was noted—a male—which was observed in a wood near to the east bank of the Grand Rhône on the 23rd of May.

Lanius minor, Gmel.

The Lesser Grey Shrike was an abundant and generally distributed species, frequenting alike the tall poplars around Arles, the low tamarisks of the southern Camargue, and the scrub fringing the Crau.

Lanius pomeranus, Sparrm.

The Woodchat Shrike was observed in the Delta only near to its apex, where a male and female were seen in a vineyard west of Arles. A nest with six fresh eggs was found in an elm near to the east bank of the Grand Rhône on the 1st of June.

Lanius collurio, Linn.

An adult male seen on an embankment of mud close to the Phare de la Cachelle on the shores of the Mediterranean, on the 27th of May, was the only Red-backed Shrike noted, and was undoubtedly on migration.

Muscicapa grisola, Linn.

The Spotted Flycatcher appeared to be very uncommon in the districts of the Bouches-du-Rhône visited by us. The bird only once came under our notice, namely, among some tamarisk-trees growing amid the wastes of the southern Camargue.

Hirundo rustica, Linn.

The Swallow was observed everywhere in suitable localities.

Chelidon urbica (Linn.).

The Martin was common around Arles, but in the Delta was confined to the banks of the Rhones, over whose waters it was not uncommon.

Cotile riparia (Linn.).

The Sand-Martin was observed in the vicinity of the Rhones, and the Canal de Bouc, but not elsewhere.

Carduelis elegans, Stephens.

The Goldfinch is a very common bird in the country around Arles; and, in suitable localities, throughout the Camargue.

Ligurinus chloris (Linn.).

This was found to be a rare species in the Camargue, though suitable haunts were not wanting in the northern districts of the Delta. Around Arles, however, the Greenfinch was quite a common bird.

Passer domesticus (Linn.).

The Sparrow was not uncommon within the cultivated area of the Camargue and Petite Camargue; and had already become a colonist in the buildings recently erected on the lands reclaimed from the Crau.

Passer montanus (Linn.).

The Tree-Sparrow is common in the northern districts of the Camargue, and in the country around Arles.

Fringilla cœlebs, Linn.

A female Chaffinch, seen close to the town of Arles on the

11th of May, was the only bird of this species that came under our notice.

Linota cannabina (Linn.).

The Linnet was very common in the Camargue, occurring in cover among the sandhills fringing the Mediterranean, as well as in the vicinity of the cultivated districts. It was also common around Arles. The coloration of many of the males was exceptionally brilliant.

Emberiza miliaria, Linn.

Not uncommon in any district of the Delta where there were low trees. The Common Bunting was also abundant in the grass-lands reclaimed from the Crau, and around Arles.

Emberiza schœniclus, Linn.

Though generally stated to be somewhat rare as a breeding species in the Mediterranean region, the Reed-Bunting was found to be quite common in the Marais du Couvin, in the south-west of the Camargue; and also in the Marais de Meyranne, on the east bank of the Grand Rhône.

Alauda cristata, Linn.

The Crested Lark proved to be a local species and far from common. It was observed in only a few instances on cultivated land in the north of the Camargue.

Alauda arvensis, Linn.

In the Delta of the Rhone the Sky-Lark attracts attention by its song in the arid and almost birdless wastes, where it shares with the Kentish Plover, and sometimes a Short-toed Lark and a Stone-Curlew, the representation of the feathered world over vast areas of barren country. We had many opportunities of inspecting this bird at close quarters, but it was not at all evident that the Sky-Larks of the Camargue were paler in colour than those at home; though a lighter form known as *Alauda cantarella* is said to take the place of the typical *Alauda arvensis* in the Mediterranean region. Many nests were found containing eggs, which in form, size, and coloration resembled those of the typical race.

CALANDRELLA BRACHYDACTYLA (Leisl.).

The Short-toed Lark has much the same distribution as the last species in the Camargue, being confined to the wastes, but is not so abundant. It also occurs in the Crau, where the Sky-Lark was not observed.

MELANOCORYPHA CALANDRA (Linn.).

The Calandra Lark was only once observed in the Camargue—on the waste to the north-east of Saintes Maries on the 16th of May. One was seen at L'Eysselle, near St. Louis. It was fairly common, however, on the reclaimed lands of the Crau which were under grass.

PICA RUSTICA (Scop.).

The Magpie was singularly abundant throughout the Camargue, even in the south, where it nested commonly in the low tamarisk-trees scattered over the wastes and among the sandhills bordering the Mediterranean. It was also very common in the country around Arles.

CORVUS CORONE, Linn.

This species was frequently observed on the sea-shore at Saintes Maries, which it visits, no doubt, for the sake of offal cast out by the fishermen. The breeding-place of these Carrion-Crows was found to lie a few miles to the west in the Petite Camargue, where in a small pine-wood, flourishing on slightly elevated sandy ground, we saw a number of their nests. This bird seems to be thinly scattered along the seaboard of the French Mediterranean region, for I saw several hanging about an encampment of sardine fishermen on the coast near the Spanish frontier in May 1889 (*cf.* Ibis, 1889, p. 548).

CYPSELUS APUS (Linn.).

The Swift was abundant but local in the districts visited, for haunts suited for brooding purposes were few and far between. It was quite common at Saintes Maries in the Camargue, where the old cathedral harboured many pairs. In Arles the numerous ruined edifices, which bear testimony to the ancient grandeur of the town, afford innumerable and congenial nesting-sites, and the bird is correspondingly abundant.

Gecinus viridis (Linn.).

A pair were seen in some hedge-timber at Villeneuve in the eastern Camargue on the 31st of May. Green Woodpeckers were also observed on several occasions on the east bank of the Grand Rhône a few miles below Arles.

Jynx torquilla, Linn.

A solitary Wryneck was seen and heard near Arles on the 1st of June.

Alcedo ispida, Linn.

Two Kingfishers were observed on the Canal de Bouc, below Arles, on the 1st of June.

Coracias garrulus, Linn.

A Roller was seen to alight on a small tree on the margin of the waste at Les Bruns, in the western Camargue, on the 22nd of May.

Upupa epops, Linn.

This bird was surprisingly abundant throughout the Camargue. Indeed, it was one of the commonest species that came under our notice. In many of the localities in which the Hoopoe was observed quite commonly there was an entire absence of the usual nesting-sites selected by this species, and it was brooding in holes at the roots of small trees, and also, it is thought, in holes in the banks of some of the drainage-levels. It was quite common around Arles. When a Hoopoe is in a rage, or greatly agitated, it utters a loud croaking note exactly like that of the frog (*Rana esculenta*) : a fact that we have not seen recorded.

Cuculus canorus, Linn.

The Cuckoo was not observed in the Camargue, but was common in the neighbourhood of Arles.

Scops giu (Scop.).

A Scops Owl was seen and heard among timber near the east bank of the Grand Rhône, on the 1st of June.

NEOPHRON PERCNOPTERUS (Linn.).

The Egyptian Vulture was common in the lowest reaches of the Grand Rhône, where several adult examples were observed on the 30th of May. One of these sailed around almost within gunshot, and was bullied by a couple of Common Terns. The presence of these birds is attributable, no doubt, to the numerous carcasses of sheep &c., in all stages of decomposition, which strew the margin of the great river, and offer an abundant repast.

No fewer than five of these Vultures were observed soaring over the Crau on the 12th of May. Here, however, their breeding-haunts are probably within sight on the limestone cliffs of the Chaîne des Alpines, which lies to the north.

CIRCUS ÆRUGINOSUS (Linn.).

The Marsh-Harrier is present in the great marshes of the Camargue, in numbers that must tell considerably to the disadvantage of the other feathered denizens. Here this species is entirely without enemies and flourishes accordingly. Five nests were found after a short search in the Marais du Couvin on the 21st of May. These were, in all instances, placed in patches of reeds or sedges in which there was a considerable mixture of the dried stems or blades of last year's growth. One nest contained six young birds, all of different ages; the youngest being small and clothed in white down, while the oldest was considerably larger and growing brown on the wings and back. The bird was also numerous in the Marais de Meyranne.

BUTEO VULGARIS, Leach.

A Buzzard was observed near the north margin of the Étang du Valcarès on the 22nd of May.

FALCO SUBBUTEO, Linn.

Five or six Hobbies were observed pursuing insects near the pine-trees in the Petite Camargue on the 19th of May.

FALCO TINNUNCULUS, Linn.

The Kestrel was seen on two or three occasions in the north of the Camargue, in localities where there were trees. One was observed in the Petite Camargue, and another among cover close to the Crau.

Pandion haliaëtus (Linn.).

Two Ospreys were observed in the Camargue on the 17th of May, and were undoubtedly migrating. Both were hovering over étangs in the western district of the Delta.

Ardea cinerea, Linn.

A solitary bird flying over the waste to the east of Saintes Maries, on the 15th of May, was the only example of the Common Heron seen in the Delta or elsewhere.

Ardea purpurea, Linn.

The Purple Heron was common in the numerous marshes of the Camargue, whose vast areas of reeds afford the bird suitable haunts, and was the only Heron that we did not find to be rare in the Delta. In a small open space among the reed-beds bordering the Étang de Ginès was found a larder of this bird—a floating circular mass—containing about one hundred eels, three snakes, and several cyprinoid fishes, all of which showed distinctly the stab of the Heron's bill.

Nycticorax griseus (Linn.).

A single Night-Heron seen in a ditch near the margin of the Étang de Ginès, on the 15th of May, was the only bird of this species observed by us in the Camargue or elsewhere in the Bouches-du-Rhône.

Botaurus stellaris (Linn.).

The booming of the Bittern was heard in the Marais de Meyranne on the 23rd of May. It was not heard in the great reedy marshes of the Camargue, though the bird is doubtlessly common there.

Ardetta minuta (Linn.).

The Little Bittern was quite common in the neighbourhood of Arles, especially on the reedy margins of the Canal de Bouc, and also in the Marais de Meyranne, both near the east bank of the Grand Rhône.

Phœnicopterus roseus (Pallas).

The chief haunt of the Flamingo is the Etang du Valcarès; indeed, we never saw it elsewhere in the Camargue, and it is said, no doubt with truth, that this étang is the only breeding-station in the Delta. The birds, however, occasionally pay a flying visit to the lagoons adjoining the Golfe de Beauduc, as we were informed by the Garde Maritime, but do not remain long in that neighbourhood.

In recent times, or it may be in wet seasons, the herd which summers in the Rhone Delta may possibly have been numerically stronger than it was during the droughty season of 1894. The local estimates, which we obtained from several sources, all placed the Flamingo-population of the Camargue at three thousand; but figures thus procured must be accepted with considerable caution, for they are seldom entirely satisfactory. Be this as it may, the numbers present in the Delta this year (1894) certainly did not exceed six hundred, at the very most. Unfortunately our several attempts at taking a census completely failed, owing to the habit these birds have of herding together, as already mentioned.

Several days were devoted to the Flamingoes. We found them eminently sociable birds, being usually gathered together, or forming two large parties, from which the individuals did not stray far. They were also essentially aquatic, frequenting always the waters of the lagoon, or their margins. And such was the nature of their chosen haunt that the birds commanded the surrounding country far and wide, and were immediately aware of the advent of intruders. In the morning we usually found them busy feeding; and when so engaged their proceedings were remarkable and puzzled us exceedingly, and for some days we quite failed to comprehend their singular behaviour. In their search for food the birds were always observed to scrape continuously with their feet the floor of the étang, and at the same time kept their heads quite submerged. The sight then witnessed was a very curious one, for it presented a moving forest of red legs, and an army of pink bodies turning, as it were, on pivots, whilst the hidden head was swept around and described an outer circle under water. The conclusion at once formed was that the food, whatever it might be, was certainly obtained by raking among the mud, and it was equally evident that it consisted of something that required to be pursued and captured. We took some pains to ascertain the nature of the food thus sought, and eventually satisfied ourselves on this, perhaps, not unimportant point. To do this it was necessary to make a careful investigation of the life contained in the waters of this large étang—fortunately not a very difficult matter, owing to its being a salt lagoon. To begin with, there was no sign of vegetation in these remarkably clear waters. We were not able to detect even the lower forms of plant-life of microscopic dimensions. Of animals, a few *dead* eels* were observed; and the valves of small cockles (*Cardium edule*) were abundant on the shores, but we failed to find any containing the mollusc. Neither of these creatures need be further discussed in connection with the food of the Flamingo. There were, however, present in the waters myriads of a tiny Phyllopod, the brine-shrimp (*Artemia salina*), and we secured a number of specimens. Indeed, so marvellously abundant were these tiny crustaceans in Valcarès that the receding waters had left them stranded in countless millions, and their decaying remains formed large discoloured patches on the shores of the étang. This so-called shrimp, it is well known, breeds in vast numbers in the mud of salt-lakes. Now, if we consider all these facts—*i. e.*, the nature of the food afforded by the étang; the peculiar method of feeding adopted by the Flamingoes; and, finally, the fact in the life history of *Artemia* just mentioned and its abundance—it is thought the chain of evidence is entirely in favour of the brine-shrimp forming the chief food of the Flamingo in the Camargue. The bird disturbs the little creatures in the mud, and entraps them in its box-like bill as they endeavour to escape in all directions. It is true that the Flamingo has not hitherto, we believe, been recorded to feed on animals of this class. But, then, do we know much about the food of this bird in a state of nature? It is usually considered to be largely a vegetarian, but that it cannot be at Valcarès.

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* These eels, no doubt, find their way into the étang from the drainage-level which communicates with it on the north, and probably soon succumb.

During the intervals of feeding some of the birds indulged in a little billing of an amatory nature, which was amusing to witness on the part of such sedate-looking and somewhat ungainly birds.

After midday they usually took a siesta, resting in a great variety of attitudes; some standing on one leg, others sleeping with their heads tucked away. All were far off in the centre of the étang.

When suspicious of our attentions, which usually happened when we had approached to within 500 yards or less, the birds ceased feeding, raised their heads to their fullest height, and commenced to stalk about uneasily, with a measured dignified gait, and a half-frightened air, that were quite ludicrous to witness. On our advancing still nearer the wings were spread, and then it is that the beauty of the Flamingo is seen to its greatest perfection and advantage. And to witness the simultaneous unfolding of a thousand lovely crimson and black pinions under brilliant sunlight is a sight the recollection of which will not readily be effaced from our memories. On these occasions the flock did not run forward to rise on the wing, but we noticed that they deliberately turned and faced a gentle breeze that was blowing and rose with perfect ease. Their appearance when on the wing, with the neck and legs outstretched, is well known; and their wing-action resembles that of the Geese. They do not, under ordinary circumstances, fly very high, but we observed them on one occasion at about 200 feet. When flying these birds are stated to assume the V-formation which is characteristically anserine. This may be quite true, perhaps, especially so when on their migrations. We never, however, observed its adoption, though we several times witnessed the whole herd frequenting the Camargue on the wing simultaneously and performing flights of at least two miles; and we also saw smaller parties, once as few as four birds, wing their way for considerable distances, but in no instance was any particular formation maintained. On alighting they run forward for several yards in a very awkward fashion, due to the impetus that is upon them at the moment of touching the muds or the waters of the lagoon. The note of the Flamingo is not loud, and somewhat resembles that of a Goose; and, so far as our limited experience goes, it was uttered only when the bird was on the wing.

A careful inspection of the members composing the flock revealed the fact that they varied very considerably in size. In some degree this may be attributable to sexual distinction, but neither this fact nor age can, it is thought, quite explain the remarkable differences in stature observed among the adults. Young dull-coloured birds were very few in number in the Camargue herd.

On the 31st of May, when we last saw them, the Flamingoes had not commenced to nidificate, and it is extremely doubtful whether any attempt would be made to nest in the Camargue in the dry season of 1894.

In parting with these birds we had a curious experience of the effects of the mirage. We had put up the birds and watched them alight about a mile away, and were retracing our steps over the muds towards the margin of the étang. After proceeding some little distance, we turned towards the birds to take a last look at them. To our surprise, they had entirely disappeared. A few moments afterwards, and while we were still gazing towards the place where we had last seen them, a small party arose above and fell again behind an invisible veil. All was then explained; but it was manifest to us that one might easily visit this vast haunt and come away without seeing the birds, though they were, comparatively speaking, near at hand.

Anas boscas, Linn.

The Wild Duck was an abundant species on and in the neighbourhood of the fresh- and brackish-water étangs of the

Camargue, and nests in considerable numbers. It also breeds on the isles in the étangs communicating with the sea adjoining the Golfe de Beauduc.

QUERQUEDULA CIRCIA, Linn.

Two drake Garganeys were observed on the Étang de Consécanière on the 18th of May.

ANAS ACUTA, Linn.

A pair of Pintails was observed on the Étang de Consécanière on the 17th of May, and perhaps others were among the numerous Duck which took wing on our approach on that occasion. Two pairs of these birds frequented this étang and were seen on several occasions. On the 28th of May two drakes and a duck were observed on the water, and a second duck was seen to leave a dense mass of purslane and seablite growing near the margin of one of the islands. We were engaged watching the Avocets at the time, and did not detect the exact patch from which the Duck issued; indeed, it was only as she flew by us that we identified the bird. From the nature of the cover from which she came—breeding-ground of the Red-crested Pochard and the Mallard—and from the manner of her flight, we were convinced that she had a nest there. A careful search among the dense tangled masses of *Atriplex* and *Suæda* failed, however, to reveal the hidden treasure. The finding of the nest of this species within sight of the Mediterranean would have been a fact worth establishing, since it would have carried the breeding-range of this species about 7° to the south of all previous records for Western Europe.

NYROCA FERRUGINEA (Gmelin).

The White-eyed Duck is said to occur on migration in the South of France; but we see no reason why it should not breed in the Delta, which appears to lie within the limits of its permanent distribution. Five birds of this species were seen on the Étang de Ginès, in the south-western Camargue, on the 17th of May.

FULIGULA RUFINA (Pall.).

The Red-crested Pochard is said to seldom visit the waters of France, and Jaubert and Barthélemy-Lapommeraye state that it is of rare and irregular occurrence in Provence. It was with agreeable surprise, therefore, that we observed two fine drakes on the Étang de Consécanière, in the south-west of the Camargue, on the 17th of May. On the following day, when approaching an island in this same étang, we suddenly came upon three drakes, which allowed us to come within about 15 yards of them. We were at once much impressed with the extreme beauty of these birds, which greatly exceeded our conception formed from cabinet specimens and portraits. We particularly noticed that the elongated feathers of the head, as seen under the brilliant sunlight, appeared to be fringed with gold.

On the island a consort of one of these fine fellows was soon discovered on her nest. This was placed in the centre of a thick tangled mass of purslane (*Atriplex portulaccoides*), so dense that it was reached by a covered way, 2 feet in length, worked in the shrub where it rested on the soil. The nest was on the ground, and consisted of a broad rim of down, with a few short dry tamarisk twigs, and contained ten fresh eggs. A few yards further on another duck of this species was disturbed—this time from under an immense shrub of seablite, quite 4 feet in height and as many in diameter. The nest in all respects resembled the last, and contained 17 eggs of two distinct types, and probably the production of different females. The eggs of one set were white and were all singularly malformed. The normal eggs are of a clear pea-green, and a trifle smaller than those of the Pochard. The down in the nest closely resembles that of the Eider-Duck in tint. Both nests were about six yards from the water, and the birds wriggled off at our feet.

About five or six pairs of this bird frequented the Étang de Consécanière, and others were observed in several localities in the southern portion of the Delta, including the marshes and étangs at the mouth of the Grand Rhône.

TURTUR COMMUNIS, Selby.

The Turtle-Dove was very common in suitable districts in the Camargue, and among the tamarisk-trees in the south. Several were seen among the sandhills close to the sea, where there were stunted trees and bushes. It was abundant in the neighbourhood of Arles.

PTEROCLES ALCHATA (Linn.).

During the day—the 12th of May—spent in the stony wilderness, La Crau, several Pin-tailed Sand-Grouse were seen.

CACCABIS RUFA (Linn.).

The Red-legged Partridge was observed chiefly in the vicinity of cultivated ground, both in the Camargue and the Crau. On several occasions we saw it on the almost birdless wastes, and also among the sandhills on the coast.

[CACCABIS SAXATILIS, Meyer.

When visiting the Crau, our kind friend M. Planton was most anxious that we should see this species, but though he caused us to be guided to the most likely localities, yet we were not fortunate enough to find it.]

PERDIX CINEREA, Lath.

Pairs of the Grey Partridge were seen on the wastes in four different districts of the middle region of the Camargue, and it was evidently not an uncommon bird. In the South of France this species is not only considered somewhat rare, but is said to be confined to high ground, so that its presence in the Delta of the Rhone, where it practically dwells at sea-level, is not without interest.

COTURNIX COMMUNIS, Bonnat.

The Quail, in our little experience, was not at all common in the Camargue. But it must be remembered that we devoted almost the whole of our time to the investigation of the wilder districts, and consequently saw comparatively little of the cultivated area, where, however, we heard the notes of this species on two occasions. It was also heard in the neighbourhood of Arles.

GALLINULA CHLOROPUS (Linn.).

The Waterhen was observed only in a certain reedy dyke near to the east bank of the Grand Rhône. It is evidently not a common bird in the Camargue, and we never saw it there.

Fulica atra, Linn.

A Coot's nest, with four eggs, was found among thin sedge in shallow water in the Marais du Couvin on the 18th of May.

Œdicnemus scolopax (Gmel.).

The Stone-Curlew was thinly distributed over the wastes of the Camargue and Petite Camargue, and was also not uncommon on the stony plain of the Crau.

Glareola pratincola, Linn.

This was a species that we quite expected to find abundant in the Camargue, yet, strange to say, we never saw it there, though many places were visited that appeared to be eminently suited to its requirements. Its absence from the Delta was, perhaps, to be attributed to an extremely dry season. The only Pratincoles observed were five or six in number, and were flying over a marsh with shallow lagoons in the southern portion of the Grand Plan du Bourg, and within a few miles of the mouth of the Grand Rhône.

Charadrius pluvialis, Linn.

Small flocks of Golden Plover were observed, along with Knots and other migratory waders, in the marshes at the mouth of the Grand Rhône on the 30th of May. On the shores of the Étang du Valcarès, on the following day, they were observed by us for the first time in the Delta, though they may possibly have escaped our previous notice. Most of the birds were in full summer dress.

Squatarola helvetica (Linn.).

The Grey Plover is evidently an abundant species during the season of its migrations in the Delta of the Rhone. We observed it between the middle and the end of May in considerable numbers on all the étangs and lagoons of the Camargue. Indeed, the numbers that came under our notice clearly indicate that the Valley of the Rhone forms one of the main highways along which this bird proceeds to and from the far north. Most of the birds seen were in the perfection of their summer dress. Jaubert and Barthélemy-Lapommeraye state that this bird is found on passage in November and the end of March in the South of France. We found it still quite abundant on the 31st of May, the last day spent by us in the Camargue.

ÆGIALITIS CANTIANA (Lath.).

The Kentish Plover was common on the deserts and wastes of the southern portion of the Camargue, and on the margins of its étangs. It was also abundant in similar situations in the Petite Camargue, and about the mouth of the Grand Rhône. It was little seen on the sea-beach in these regions.

ÆGIALITIS CURONICA (Gmel.).

Two Lesser Ringed Plovers seen on the margin of the Étang de Consécanière, on the 17th of May, were the only ones that came under observation.

ÆGIALITIS HIATICULA (Linn.).

The Ringed Plover is usually described as an abundant species throughout Europe in suitable localities. The shores of the Mediterranean from the mouths of the Rhone to the Spanish frontier, though affording ideal haunts, are probably an exception to this rule. I did not see the bird on the shores of the Pyrénées Orientales in 1889, nor on those of the Delta of the Rhone in 1894. Many, in a flock, were observed feeding on the muds, along with the Dunlins &c., on the north shore of the Étang du Valcarès on the 22nd of May, and were doubtless on migration only.

VANELLUS VULGARIS, Bechst.

The Lapwing was observed in two localities only, and in very small numbers. In the Camargue a few were seen on a waste in the extreme south-east, near Beauduc. In the Rhone marshes below St. Louis several were observed in the neighbourhood of the Golfe de Fos.

HÆMATOPUS OSTRALEGUS, Linn.

The Oystercatcher was common on the shores of the

Mediterranean; and also on the beds of the dried-up étangs of the Petite Camargue, where it was breeding.

Recurvirostra avocetta, Linn.

The Avocet was not an abundant species in the Camargue in the spring of 1894. This may have been due to the extreme dryness of the season, which rendered secure, and, indeed, suitable breeding-haunts few in number. On the Étang de Consécanière, which was little affected by the drought, about seven pairs were breeding on a small island, depositing their eggs in cakes of curled sun-dried mud near the water's edge. One nest was a depression worked in a mat-like patch of glasswort (*Salicornia radicans*) growing on the muddy shore. A single bird was observed feeding on an étang in the Rhone marsh below St. Louis on the 30th of May. This bird must be a late breeder in the Camargue, for the first eggs were found on the 28th of May.

Himantopus candidus, Bonnat.

This was another species whose numbers were, perhaps, considerably affected by the extreme drought of the season. On the 28th of May we had the pleasure of watching five of these singular birds as they sought their food in the shallow waters of an étang in the south-west of the Camargue. On being disturbed they flew noisily over our heads and around us. They showed no signs of breeding. A pair were seen on a small pool in the Marais de la Grande Mar on the 31st of May.

Tringa alpina, Linn.

Many Dunlins were observed feeding on the north shore of the Étang du Valcarès on the 22nd of May. Most of them were in full summer plumage.

Tringa minuta, Leisl.

Five Little Stints were observed on the north shore of the Étang du Valcarès on the 22nd of May.

Tringa subarquata (Güld.).

Several Curlew Sandpipers were seen feeding on the south shore of the Étang du Valcarès on the 20th of May.

Tringa canutus, Linn.

The Knot was observed, during the last ten days of May, as an abundant species on the margins of the étangs and lagoons of the Camargue and Petite Camargue, and those of the Grand Rhône adjoining the Golfe de Fos. All the birds observed were in full summer dress.

Calidris arenaria (Linn.).

Migratory Sanderlings were observed in some numbers on the margins of the étangs and lagoons of the southern portion of the Camargue between the 16th and the 20th of May, inclusive.

Totanus hypoleucus (Linn.).

The Common Sandpiper was observed singly and in pairs in various districts throughout the Delta of the Rhone, between the 11th and the 30th of May. They were always observed in the neighbourhood of water, where they were busily engaged in searching for food.

Totanus calidris (Linn.).

As a resident species the Redshank was common in suitable haunts throughout the Camargue and Petite Camargue. In addition, however, to the nesting birds, there were present on the shores of the numerous étangs parties of migrants, the largest of which contained over one hundred birds and was observed on Valcarès on the 31st of May.

Totanus fuscus (Linn.).

Several Spotted Redshanks in full summer plumage came under our observation on the étangs of the southern portion of the Camargue between the 18th and 26th of May.

Totanus canescens (Gmel.).

This species was frequently noted between the 17th and the 31st of May, both in the marshes and in the vicinity of the étangs of the Delta. These Greenshanks were, however, always observed singly, for though several frequented the same locality they were never seen in company. One was observed on the margin of the Marais de Meyranne, south of Arles, on the 23rd of May.

LIMOSA LAPPONICA (Linn.).

A solitary Bar-tailed Godwit, in partial summer dress, was feeding in the shallows of an étang in the Rhone marshes adjoining the Golfe de Fos on the 30th of May.

NUMENIUS PHÆOPUS (Linn.).

The Whimbrel was only observed on two occasions, namely, in the Petite Camargue on the 19th of May, where one was seen on the Étang d'Icard; and several on the Étang du Vaisseau, in the south-eastern portion of the Camargue, on the 26th of that month.

NUMENIUS ARQUATA (Linn.).

The Curlew is quite rare as a resident species in the Camargue, and only twice came under our notice, in the south-west of the Delta. A dozen, or more, were seen feeding on the shore of the Golfe de Fos on the 30th of May.

STERNA FLUVIATILIS, Naum.

The Common Tern is found throughout the southern or lagoon region of the Camargue, breeding commonly on the islands of the étangs. It was also observed on the Marais de Meyranne, below Arles.

STERNA MINUTA, Linn.

This species was fairly common on the étangs of the Camargue, especially those bordering the Mediterranean. It was frequently seen on the sea-shore, at the mouths of the Grand and the Petit Rhône, and on the Canal de Bouc near Arles. The Little Tern was nowhere found breeding, but probably we were too early for eggs.

STERNA ANGLICA, Mont.

A dozen or more Gull-billed Terns were observed at the mouth of the Petit Rhône, in company with *Sterna fluviatilis* and *Hydrochelidon nigra*, on the 19th of May.

HYDROCHELIDON HYBRIDA (Pall.).

Several Whiskered Terns were observed hovering over the Étang de Consécanière on the 17th of May.

HYDROCHELIDON LEUCOPTERA (Schinz).

A White-winged Black Tern was seen on the Golfe de Fos on the 30th of May.

HYDROCHELIDON NIGRA (Linn.).

Black Terns were observed in small numbers on several étangs in the southern Camargue, and at the mouth of the Petit Rhône, down to the 19th of May, after which none were seen. This species, and others of its genus, we expected to find breeding in the Delta, but we failed to discover their haunts, and much doubt whether any of the group nested there in 1894.

LARUS CACHINNANS, Pallas.

This Herring-Gull was quite common on the shores of the étangs of the southern Camargue, on the Rhone, and on the Mediterranean. All the examples observed were, however, in more or less immature plumage.

LARUS RIDIBUNDUS, Linn.

The Black-headed Gull was seen only on an island in the Grand Rhône, just above its embouchure, on the 30th of May.

LARUS MARINUS, Linn.

An excellent view was obtained of an adult Great Black-backed Gull on the Étang de Galabert, on the 27th of May. A westerly gale was blowing at the time, which drove the waters of the Mediterranean into the étang, and the bird was observed slowly flying against the wind. Adult birds are somewhat rare on the Mediterranean even in winter, at which season usually this Gull is observed there.

STERCORARIUS CREPIDATUS (Gmel.).

Two Richardson's Skuas were seen in pursuit of the Terns—*Sterna anglica, S. fluviatilis, S. minuta*, and *Hydrochelidon nigra*—at the mouth of the Petit Rhône on the 19th of May. One of these was of the melanic form. Both were adults, with long central tail-feathers.

[illegible] the [illegible] Cran, [illegible] and

[illegible] Birds [illegible]

Podicipes cristatus (Linn.).

Several pairs of Great Crested Grebes frequented the Étang d'Entressen, in the central portion of the Crau, which afforded a suitable haunt, the water being deep and fringed here and there with reed-beds.

XVI.—*On some new and little-known Species of Birds from Formosa.* By Henry Seebohm.

(Plate VI.)

Mr. Holst has been a year or more in the island of Formosa, and so long as he remained near the coast his collections contained nothing of special interest. He has not yet succeeded in ascending Mount Morrison, but a small collection from the outlying spurs of the range may be regarded as the first-fruits of a rich harvest which awaits any ornithologist who may make a collection in the above island at a few thousand feet above sea-level.

Parus holsti, sp. nov. (Plate VI.)

I have great pleasure in naming this very handsome and distinct new species of Tit after its discoverer. It belongs to the subgenus *Machlolophus*, with a conspicuous crest and a white nuchal spot. In addition to the white nuchal patch, the greater wing-coverts and tertials are tipped with white, the outer web of the outermost tail-feather on each side is white, and all the rectrices are tipped with white. The upper parts are greenish metallic blue, duller and bluer on the quills. The whole of the underparts and the lores and ear-coverts are bright yellow.

Length of wing 2·9 inches, tail 2·1, culmen 0·4, tarsus 0·8. Bill black, legs and feet pale greyish blue, irides brown.

Rallina formosana, sp. nov.

This apparently new species of Rail was procured on the 15th November, and may possibly be not quite adult. The upper parts are dark chocolate-brown; the throat—which is slightly damaged—may be whitish; the breast-feathers are brown, with chestnut centres; the rest of the underparts are black barred with white; there are traces of white spots on the basal third of the outer webs of the primaries, and imperfect white bars across the inner webs of both the primaries and secondaries. Length of wing 5·1 inches, tail 2·2, culmen 1·15, tarsus 1·75, middle toe and claw 1·7. The first primary is about as long as the secondaries and about 1·25 inch shorter than the fourth, which is the longest.

Upper mandible dark grey, lower mandible bluish grey, shading into yellowish green on the gonys; legs and feet greyish black; orbital ring and irides yellow.

No species of *Rallina* has been known to occur in China or Japan, but a species has been described from one of the Loo-choo Islands under the name of *Euryzona sepiaria* (Stejneger, Proc. United States Nat. Mus. 1887, p. 395). This appears to be a larger bird with a paler crown, and much less white on the wings. The next nearest species, geographically, is *Rallina euryzonoides*, from the Philippine Islands. This species is about the same size as the Formosan bird, and has about the same amount of white on the quills; but this character varies considerably, as some examples from Luzon have white on both webs, like the Formosan bird, whilst others have the white restricted to the inner webs. The birds from the Philippine Islands have a chestnut head when adult, and it is possible that such may be the case with the Formosan bird, though there is not the slightest appearance of anything of the kind. Compared with immature examples of *Rallina euryzonoides* or *Rallina superciliaris* from Malacca, the upper parts of the Formosan bird are much darker.

I am afraid the genus *Rallina* is a very bad one, and ought not to be regarded as distinct from the genus *Hypotænidia*. The latest authority on the subject has certainly made a curious mistake in the characters which are supposed to separate them (Sharpe, 'Catalogue of the Birds in the British Museum,' xxiii. pp. 2 & 3). In both these supposed genera the culmen is decidedly shorter than the middle toe and claw.

MERULA ALBICEPS.

Fresh examples shot in the middle of November are much handsomer birds than those obtained by Swinhoe in the middle of March, and appear to be more mature. Instead of the upper parts below the neck being dark brown they are jet-black, and the black meets across the upper breast below the white throat. In the fully adult female the rump, upper tail-coverts, and tail are dark slate-grey.

PITTA NYMPHA.

Mr. Holst obtained a female with half-developed eggs in the ovary on the 10th of May. Swinhoe obtained the type of *Pitta oreas* on the 16th of May. Mr. Holst remarks that it is found sparingly on the smaller mountains of South-west Formosa. Swinhoe obtained it from the mountains both of North and South Formosa. Mr. Holst remarks that upon dissecting it he found that it had been feeding upon beetles and small shells. Bill dark grey, paler towards the tip. Legs and feet greyish white. Irides dark brown, pupil blue. *Pitta bertæ,* from Northern Borneo, appears to me to be the same species.

Bill dark grey, paler at the tip; legs and feet greyish white, slightly brownish; orbital ring black; irides dark brown.

SCOPS HAMBROECKI.

This is a very interesting example, inasmuch as the type procured by Swinhoe in North Formosa nearly thirty years ago has hitherto been the only example known, and, being in the Norwich Museum, is not conveniently situated for students in London. It is a small bird (wing 5·6 inches long), with a very conspicuous narrow white collar round the hind neck.

XVII.—*Field-Notes on the Birds of the Estancia Sta. Elena, Argentine Republic**. By A. H. HOLLAND. *With Remarks by* P. L. SCLATER.

[MR. HOLLAND sends us the following field-notes, chiefly relating to species recently noticed at his estancia in the

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* For previous paper see 'The Ibis,' 1893, p. 483.

Argentine Republic, and not previously met with there. The accompanying specimens have been examined by Sclater, who appends a few remarks.—Edd.]

1. Mimus patachonicus (Arg. Orn. i. p. 7).

This Mocking-bird arrives here in April, departing in spring. It lives singly or in pairs amongst the bushes, and occasionally utters a few irregular notes.

[A young female of this species (Sta. Elena, 3. v. 93), which I should not have expected to occur so far north. "Iris olive-green; legs and bill black."—P. L. S.]

2. Progne furcata (Arg. Orn. i. p. 24).

I have observed a pair of adults of this species all through the summer, and on January 21st I found them accompanied by two immature birds, one of which I shot. I can only conclude that they nested in an old ruined mud-house, which is never visited by anyone. It contains many holes, which are occupied by various birds in the breeding-season.

It seems very far north for this species to breed, though many pass here on migration.

3. Vireosylvia chivi (Arg. Orn. i. p. 22).

A shy summer visitor, frequenting the plantations, where it passes from one tree to another searching for insects, occasionally making a short flight after these on the wing. Its note is a faint hiss twice repeated.

[Mr. Holland sends a skin of this species, which he was inclined to refer to the Tyrants. "Sta. Elena, 12. xi. 93: legs blue; iris hazel; bill dark brown, beneath bluish."—P. L. S.]

4. Donacospiza albifrons (Arg. Orn. i. p. 49).

Fairly common throughout the winter in small companies, which frequent the dried weeds and montes. This specimen was the brightest in a flock.

[The specimen sent by Mr. Holland (♀, 29. vi. 93), and supposed by him to be a *Poospiza*, is a young bird of the allied form, *Donacospiza albifrons*.—P. L. S.]

5. Saltatricula multicolor (Arg. Orn. i. p. 61).

Some four or five of this species, all in a moulting condition, stayed here a few days in November.

[A female (Sta. Elena, 23. xi. 93) is labelled:—"Iris hazel; bill horn-colour, beneath yellow; legs brown."—P. L. S.]

6. Embernagra platensis (Arg. Orn. i. p. 62).

This Ground-Finch is found breeding throughout November. It makes a cup-shaped nest of fine dry grass, sometimes lined with horsehair. This is placed either under herbage on the ground, or else low down in the same.

The eggs are three in number. They are blunt in shape, and are of a white or reddish-white background, striped with numerous lines and blotched with reddish brown and pale purple at the larger end.

Molothrus bonariensis constantly lays its eggs in these nests.

7. Trupialis defilippii (Arg. Orn. i. p. 105).

In this district De Filippi's Marsh-Starling breeds in November. It makes a cup-shaped nest of dry grass in a hollow in the ground well concealed under grass. The eggs are three or four in number, long in shape, of white or bluish white thickly spotted all over with pale reddish brown.

8. Tæniopterа irupero (Arg. Orn. i. p. 118).

A winter visitor, living singly or in pairs amongst the trees, occasionally making short turns after passing insects.

[A male (Sta. Elena, 18. iv. 93) is marked "rare." Bill, legs, and iris black.—P. L. S.]

9. Muscisaxicola macloviana (Arg. Orn. i. p. 133).

Another winter visitor, usually found in pairs, which have some chosen post or other elevation from which they make turns after insects. They also frequent ploughed land, where they run after their prey.

[This is another southern bird which I should not have expected to occur at Sta. Elena. Mr. Holland sends a male (16. vi. 93). "Iris hazel; legs and bill black."—P. L. S.]

10. **Myiodynastes solitarius** (Arg. Orn. i. p. 150).

A shy summer visitor, frequenting the trees and taking flights after insects.

11. **Upucerthia dumetoria** (Arg. Orn. i. p. 170).

A winter visitor, arriving in May and departing early in August.

[Another visitor from the south: Mr. Hudson once obtained a pair near Buenos Ayres. It is common in Patagonia.—P. L. S.]

12. **Synallaxis albescens** (Arg. Orn. i. p. 179).

Found in pairs from September to April. The nest is placed low down in weeds or bushes, and is composed of sticks, lined with wool. In shape it is domed, with a passage leading out of the top. In building, a large cup-shaped nest is first made, which is then covered over and a tubular passage added. Eggs three or four, of a pale green colour.

13. **Circus macropterus** (Arg. Orn. ii. p. 58).

A common Hawk here at all seasons, often seen in company with *C. cinereus*, and beating up its prey from bushes and weeds in much the same way. Its stoop is more powerful, and its longer breadth of wing enables it to fly with more despatch and in a sailing manner. It breeds in the long grass, but, so far, I have not discovered its nest.

14. **Buteo erythronotus** (Arg. Orn. ii. p. 62).

A winter visitor, living in loose flocks and coming much about houses where there are suitable trees. It is fearless of man and easily shot. The immature birds have the breast thickly spotted with brown, and the tail brown with black bands.

[Mr. Holland sends a fine adult female specimen with a red back.—P. L. S.]

15. **Larus cirrhocephalus** (Arg. Orn. ii. p. 201).

I found this Gull nesting in company with *L. maculipennis*, though the nests were, to a certain extent, all in the same part of the gullery, which was an enormous one in a rush-bed. The nests and eggs are similar to those of *L. maculipennis,* excepting that there is less variation in the colour of the eggs, and their average size is a shade larger.

XVIII.—*Notes on the Nidification of some Indian Birds not mentioned in Hume's 'Nests and Eggs.'*—Part II. By E. C. Stuart Baker, F.Z.S.

[Continued from p. 64.]

20. Lioptila annectens. (*Oates,* Fauna of British India, Birds, i. p. 199.)

The nest of Blyth's Sibia is a deep cup strongly, though rather loosely, built, with massive walls and base, averaging nearly 6 inches in outward diameter by some 3 in depth, and with a cavity measuring about 4 inches or less by about 1″·6 in depth. Some few nests are deeper, the cup being as much as 2″·5 internally. All the nests I have seen (now some seven or eight) appear to consist of three very distinct parts. The outer shell is formed mainly of living moss and moss-roots, more or less intermixed with a little grass, a few leaves, tendrils, weed-stems, or similar materials. Inside this, and below the true lining, is a layer of grass and roots, often much mixed with the thin soft stems of some herbaceous plant, whilst the actual lining consists of fine fern- and moss-roots, and also of the stems of maiden-hair fern. The nest of *L. capistrata* found by Captain Cock seems to have been lined in much the same manner (Hume's 'Nests and Eggs,' vol. i. p. 134). Unlike its nearest allies, which appear to place their nests in very elevated positions, this Sibia seldom builds more than 20 feet or so from the ground, generally selecting a slender branch on the outside and at the top of some small sapling standing in thin evergreen-forest. I have not, however, taken its nest from deep forest and never from open country, but have had one brought to me which the bearer said he had found in a densely-wooded hollow near the summit of a lofty grass-covered hill. The full complement of eggs seems to be three; less than this number I have never seen showing signs of incubation, and four I have not taken.

In appearance, judging only from the description given by Hume, the eggs must very closely resemble those of *L. capistrata*, and they are extremely like the eggs I have personally taken of *Actinodura egertoni*. The ground-colour is a pale, rather bright blue-green, the markings consisting principally of pale reddish-brown lines, together with a few blots, blotches, and specks of the same colour, in addition to which there are often a few well-marked dots of purply red and a few indistinct blotches, looking as if half washed out. The lines are often of great length, though from their twisted and knotted character they do not always take much room. In two eggs out of three these lines are the predominating form of marking, in others the clouds and blotches are most numerous, and in some they are equally distributed. In all my eggs the markings, of whatever kind they may be, appear to be confined to no portion of the surface in particular.

In shape the eggs are rather long ovals, very regular as a rule, but occasionally a little compressed towards the smaller end, which is, however, always blunt. The surface is smooth, but almost, if not quite, glossless, and when examined very closely is seen to be minutely, almost invisibly pitted. Fifteen eggs average 0″·86 by 0″·59, and in length vary between 0″·82 and 0″·89, but in breadth only between 0″·58 and 0″·61.

My largest and smallest eggs were both obtained in the same clutch. I have only found it breeding on the lofty Hungrum and Léré ranges and the surrounding peaks, which rise to over 6500 feet, and it rarely, I think, descends below 5000 feet. It breeds, so far as I know, in April and May only.

21. STAPHIDIA CASTANEICEPS. (*Oates*, op. cit. i. p. 205.)

At least nine tenths of the nests of this little *Staphidia* I have taken—and by this time the number must be over 40

—have been found in holes in roadside cuttings. Nearly every road in North Cachar has a straight bank of earth on one side from which the soil has been cut away, either to form the road or to lower the level, and in these banks the chestnut-headed *Staphidia* makes its nest. I have taken them from natural hollows, such as are caused by the falling out of a stone or decay of a large root; or from near the entrance of deserted rat-, Kingfisher-, or Bee-eater-burrows. Sometimes they will be found just inside rather large holes, part of the material hanging out and proclaiming the presence of the nest to any one who approaches within a few yards; at other times in some hole the entrance to which is completely screened from view by overhanging ferns, moss, or weeds. Once I have found the nest amongst the roots of a laurel-like shrub, and further protected by a large clod of earth which lay above it; another nest was taken from a hole in a mud-wall, and two from the steep banks of ravines.

The nest is almost invariably made entirely of the very softest shreds of grass and of a material which looks like very silky jute, and is probably the inner bark of some tree; the lining is of the same material only. In a few nests I have seen some dead leaves, a few dead brown plant-stems, fern-roots, &c., used generally only for the purpose of filling up the gap between the nest itself and the entrance to the hole, but occasionally for the groundwork of the nest itself, and they were particularly numerous in the nest found in the roots of the laurel.

The nest is a very compact, well-built little structure, with thick closely-woven walls. Outwardly there is practically no shape, this conforming to the hole in which it lies, but the receptacle for the eggs may be said to average some 2″ in diameter by rather less than 1″ in depth. I have taken nests as much as 9″·3 across the external diameter and others well under 2″·5, and some are not more than 0″·5 in the centre of the depression.

The ground-colour of the eggs is white, of a pearly or china tinge, rarely tinted faintly with green, and yet even more seldom with grey. The markings vary a good deal, both in coloration and tint, but not much in character. They may be said to grade from pale sienna to dark vandyke-brown as regards the superior markings, and from pale grey to dark neutral tint as regards the inferior ones, though these latter are often totally absent. In shape they are normally small, with irregular blotches and spots; in some eggs the whole surface is minutely and profusely *speckled*, in others the blotches predominate or the specks are altogether wanting, and these eggs are therefore of a bolder appearance. As a rule the marks, of whichever shape they may be, are most numerous at the larger end, and rather sparse comparatively at the smaller; occasionally they are scattered equally everywhere. Rings or caps are not at all commonly met with; I have two or three clutches containing one or more eggs which possess them in a slight degree, but none in which they are at all well marked.

In shape they are broad, very regular ovals, and abnormal eggs are extremely rare. The texture is fine and very smooth, though fragile, showing a faint gloss, not always present and rarely at all strongly developed. Fifty eggs average 0″·67 by 0″·52, fully, and they range in size between 0″·64 × 0″·49 and 0″·69 × 0″·56, but very few eggs will be found that do not measure between 0″·50 and 0″·53 in breadth.

22. YUHINA NIGRIMENTUM. (*Oates*, op. cit. i. p. 212.)

The nidification of this bird is given in Hume's 'Nests and Eggs,' vol. i. p. 139, but (as Oates has always thought) the identification by Gammie of his nest could not have been correct. That of Jerdon's was, of course, made by a native, and his note is therefore quite valueless. This year I have been fortunate enough to obtain two nests, one of which I practically found and took myself, and which is now in the Natural History Museum, South Kensington. I had been out birds'-nesting, and, on my return to camp, passed a dead tree by the roadside covered with most luxuriant lichen. To get some of this I sent a Naga up the tree, and on climbing up he disturbed a bird; looking under the bough in the place whence the bird flew, he found a nest and four eggs. In accordance with my instructions he set a noose or two about the nest for the bird and came down. We both then hid a little way off, and it was hardly a quarter of an hour before the female returned and was trapped. The bough of the tree was covered with long pendent lichen, growing very thick and close, and it was between two long pieces that hung either side of the branch that the nest was suspended. In shape it is a very massive, compact little cradle, the two ends prolonged and intertwined with the lichen from which it hangs. Outwardly the longest way it measures 3″·4, and across the narrowest way 2″·8. The depth of the actual nest is 1″·85, or, including the lengthened sides, 2″·55. The egg-cavity is 1″·75 across the top and 0″·88 deep. The material consists almost entirely of moss-roots, only a very few small scraps of dead moss being also used, and the lining is composed of the very finest stems of grasses and one flowering grass-end. Strength is added by the help of numerous cobwebs, these being most numerous about the portion which includes the supporting lichen.

Of the eggs, one was broken by the hen bird in its struggles to escape, the other three measure 0″·68 × 0″·50, 0″·67 × 0″·50, and 0″·64 × 0″·49. In colour they are a very pale but bright sea-green, and they are rather profusely spotted all over with very pale brown irregular blotches, which also form a ring about the larger end nearly 0″·15 wide, inside which the marks are very few. On the ring are a few dots of darker brown, some quite dark vandyke, and one or two of these are also to be found inside the ring.

The nest was taken at Guilang, a village some 4000 feet above the sea, on the 29th of July; the eggs were just commencing to show signs of incubation.

Another nest was brought to me by a Naga, together with a male, and exactly corresponds in every single detail with that already described, and was found attached to another dead tree not 20 yards from that on which the other was found. It contained four eggs very hard-set, which differ from those in the first nest only in being slightly duller. They measure 0″·66 × 0″·51.

The texture of the eggs is smooth and fine, but is glossless and rather chalky, though stout for so tiny an egg.

23. ZOSTEROPS SIMPLEX. (*Oates*, op. cit. i. p. 215.)

I found a few of these birds breeding on the high ranges to the east of the North Cachar Hills. There is absolutely nothing to note about their nidification which in any way differs from that of *Z. palebrosa*. I have not met with any nest so completely plastered with cobwebs and spiders' egg-bags as the nest of *Z. palebrosa* is sometimes found to be. I have not seen this bird below 3000 feet, and it is very local in its distribution. In 1893 I did not come across a single specimen, and I should not be surprised to find that it is hardly a regular resident so far west as Cachar.

24. CHLOROPSIS AURIFRONS. (*Oates*, op. cit. i. p. 234.)

This bird is one of the later breeders, seldom laying before the end of May or beginning of June, and its eggs may be found well on into the middle of August, as on the 16th of this month I once took two fresh eggs. The earliest date on which I have seen eggs was the 12th of May, 1891. The nest appears to be very like that of *C. jerdoni* (Hume, 'Nests and Eggs,' 2nd edit. vol. i. p. 155), but I have seen very few of this bird's nests, and judge principally from the accounts in the book just referred to.

Amongst other birds'-nests to which it nearly approximates are those of the genus *Hemixus*, the nests of that genus differing principally in being more bulky and less tidy. It is generally placed in a semi pendent position in a small horizontal fork, the supporting twigs coming outside the sides of the nest, which does *not hang* from them as does an Oriole's. The fork chosen is usually one on the outer branches of some small tree or sapling, less often in a stout fork of some larger tree, and I have never seen a nest placed on the upper surface of a large bough in the manner that *C. jerdoni* is said sometimes to build.

In shape the nest is a rather shallow cup, measuring in outward diameter from 3″·5 to about 4″, and in depth from 1″·3 to 1″·8, the latter depth being unusual, it generally being under 1½ inches. The inner portion is made of very fine twigs and coarse grass-stems, more or less mixed with moss-roots and fine tendrils of convolvuli and other creepers, and sometimes with stalks of the common maiden-hair fern. The whole of this is bound together, and also more or less interwoven, with soft grasses, dead scraps of moss, and a material which appears to be the inner bark of some tree. Further strength is added by means of cobwebs, a very large amount of this material being used in a few nests. The nest, when not in an upright fork, is very firmly fixed, although not much of the material of which the nest is composed is actually wound round the supporting twigs. I have seen one or two nests with a little live moss incorporated with the other materials, giving to then an appearance much like small neat nests of *Hypsipetes psaroides*. The eggs, which are usually two in number, sometimes three, vary in ground-colour from a pale pink, so faint as to appear white, to a rather warm pink, though eggs at all deeply tinted are the exception. Most eggs are marked with small specks and spots of a deep reddish brown, and also with irregular lines and streaks of the same colour, often so dark as to appear black if only casually examined. In most eggs the specks and spots appear to be the predominating form of markings, but in others the lines predominate, and in one egg I possessed nearly all the markings were of this character. Whatever they may be, however, they are not numerous, and are mostly confined to the larger end, where they often form a zone. Another type of egg has all the marks, of whichever kind, blurred and fainter, looking as though some one had tried to wash the egg and, by so doing, caused the colour of the markings to become paler and, at the same time, to run, giving the egg a mottled surface, not unlike a weakly-marked egg of *Criniger flaveolus*.

Most eggs are long in shape: some very regular ovals, and others decidedly pointed. The shell is close-grained, smooth, and delicate, and in the majority of cases shows a faint gloss, seldom at all pronounced. Fifteen eggs taken in North Cachar average 0″·94 × 0″·65, but deducting the three largest, which are abnormally large, and which were brought to me by a Naga with one of the parent birds, the remaining 12 average only 0″·91 × 0″·635. They vary in length between 0″·86 and 1″·1, and in breadth between 0″·62 and 0″·69. This bird makes its nest in trees on the outskirts of forest or in small thickets in nullahs surrounded by grass-land, never, so far as I know, inside heavy forest.

25. CHLOROPSIS HARDWICKII. (*Oates*, op. cit. i. p. 236.)

There is hardly anything to say about the nidification of this species which I have not already said of *C. aurifrons*. I have seen very few nests, and of these it can only be remarked that two were deeper than any I have seen of that bird, one measuring over 1″·8 and the other 2″·05. It builds in the same sort of position also, but selects higher trees, and I have not taken any nest below 25 feet, and one or two from very much more lofty sites, whereas *C. aurifrons* seems to prefer a height of some 12 to 20 feet. I do not remember seeing any nest of this *Chloropsis* which contained, amongst the materials of which it was composed, any green moss. Both birds breed during much the same period.

The few eggs I have seen of this handsome *Chloropsis* could not possibly be distinguished from those of *C. aurifrons*, and differ from those of *C. jerdoni* only in their much greater size, averaging, as they do, 0″·91 × 0″·61. I have one egg among these seven which is exceptionally large, measuring 1″·05 × 0″·7, and it is worthy of note that I should have found abnormally large eggs both of *C. aurifrons* and *C. hardwickii*, the more especially as I have seen but very small series of both.

26. MELANOCHLORA SULTANEA. (*Oates*, op. cit. i. p. 241.)

I have taken only one nest of this handsome bird, and, as I was out after big game at the time, I could not shoot either of the parent birds, though I saw them very distinctly, and have no doubts about my identification of them having been correct. It will be seen that both nest and eggs show very strong affinities to those of the Tits, and probably the position in which this genus was originally placed (*i. e.*, in the family Paridæ) will be found the right one, and it will have to be removed from the Liotrichinæ.

The nest in question was taken on the 17th May, 1890, and was placed in the bottom of a long narrow crevice which ran down several feet of one of the main boughs of an old oak tree. This tree was one of a thin scattered forest of oaks, with rather short, though coarse, grass undergrowth, the forest being interrupted with occasional patches of grass-land or with dense bush and tree-jungle at the bases of the hills, which here ran to some 1500 feet. At the time I found the nest I was out after gaur, and whilst resting for a few moments on a fallen tree I observed a Sultan-bird flying about in a very peculiar manner on a tree opposite to where I was sitting. In his mouth he seemed to be carrying something edible, and it was not long before he made up his mind that I was nothing very dangerous, and, flying off to another oak some dozen paces away, shortly disappeared into the crevice already mentioned. Of course I concluded that there must be a nest, and at once sent up one of my native trackers to investigate. As he went up the two birds flew away, and, after examining the bottom of the hollow, he reported a nest containing seven eggs. The nest was composed almost entirely of small scraps of fern-fronds and moss, mostly of lycopodium and other moss-ferns, two or three kinds of which grew very luxuriantly close by. In shape it merely fitted closely into the bottom of the hollow in which it was placed, and as this gradually narrowed to a point, the nest, when removed, roughly approximated to an inverted cone. In depth and diameter it was about 4″ either way, and the depression in which the eggs lay was about 3″ across by rather less than ½″ deep, and even this was nearly filled with the soft cotton down taken from an adjacent bombax. The eggs, most unfortunately, were very hard-set when I found them; from two the chicks were even then emerging, and these I broke in the attempt to clean them; three others were blown, though with great difficulty, and two were comparatively easy to manage.

The ground-colour is a chalky white, and the markings consist of numerous, rather bold and rich, though small, blotches and spots of brownish red, with others, secondary to them, of pale neutral tint and pinkish grey, the pink tinge varying considerably in intensity. In shape they are broad regular ovals, the smaller end differing but slightly from the larger. The texture was much like that of the eggs of *Machlolophus*, yet even more chalky and decidedly more fragile; but it must, of course, be taken into consideration that the eggs were very much incubated, and under ordinary circumstances the fresh eggs would be far less delicate. There is no gloss on their surface. The five eggs average 0″·76 × 0″·6.

Another clutch of eggs, *said* to belong to this bird, were brought to me by a native, but they were so hard-set, in addition to being damaged, that I found it impossible to preserve them. They differed from those described above only in being much larger, 0″·83 × 0″·65, and in being *slightly* more compressed at the small end.

27. HEMIXUS FLAVALA. (*Oates*, op. cit. i. p. 263.)

This bird builds a nest which generally bears a character distinct from those of all other Bulbuls. The typical nest of the species is composed either entirely or nearly so of grasses, the major portion of these being rather stout and strong ends, from which all seeds and flowers, with their attaching stems, are stripped. The lining is almost invariably made of these, and the body of the nest with these and other grasses, stems, and leaves intermixed; sometimes strips of ekra-leaves and other broad-bladed grasses, at other times thin yellow shreds from the bark of the stems and other fine materials. Other nests have various materials mixed with the grass, such as bamboo-leaves or a very few small elastic twigs, and in one nest I took there were several scraps of moss and a few fern-roots. In shape the nest is a compactly made and rather deep cup, averaging some 3½ inches across by about 2½ deep. The inner diameter is something under 3 inches, and the depth from 1½ to 2. It is generally a neatly built nest, the component parts being strongly interwoven and carefully put together. The favourite breeding-ground of the Brown-eared Bulbul consists of dense scrub-jungle growing at elevations over 4000 feet, and I think I have taken more nests from wild lemon-bushes than from any other kind of shrub. These lemon-trees are of exceedingly thick foliage, and the bird selects a place low down in a stoutish fork in which to place its nest, as a rule at heights under 3 feet from the ground, seldom, if ever, over 5 feet from it. I have taken one nest from a bunch of coarse grass and creepers growing by a forest-track, but on no other occasion have I known them to build in a similar place. In ground-colour all my eggs are the same delicate pale pink, of a beautifully clear tint, and the markings consist of small specks, spots, and freckles, varying in shade from bright light pink-red to dark brownish red; in all, however, the character is the same, and in all eggs they are very numerous over the whole surface, being but slightly more so at the larger end than at the smaller. Many eggs are practically undistinguishable from those of *H. macclellandi*, but, typically, they are brighter and far lighter.

Eighteen eggs vary in length between $0''\cdot87$ and $0''\cdot96$ and in breadth between $0''\cdot72$ and $0''\cdot69$, the average of the same number being $0''\cdot93 \times 0''\cdot69$.

The texture is very much the same as that of the eggs of *Otocompsa*, especially *O. flaviventris*, but is, if anything, finer and closer. In shape they are rather regular, very long ovals, abnormal eggs being even longer; pegtop or spherically inclined eggs I have not seen, and I can remember but two eggs which were of a broad oval type. Three is the full complement of eggs, almost as often only two being laid, and never, in my experience, four. The birds breed principally in May, and a good many in the end of April and in June, but very few as late as July, in which month *H. macclellandi* is still to be found breeding in considerable numbers.

28. ALCURUS STRIATUS. (*Oates*, op. cit. i. p. 266.)

The few nests of this species which I have seen were all very much alike in every respect: shape, materials, and construction. The first nest I ever saw was found by me when marching from one camp to another. The track or pathway by which I was going wound steeply upwards, in short zigzags, through evergreen forest containing a dense undergrowth of all kinds of bushes. From one of the densest patches of these bushes a pair of Striated Green Bulbuls flew and settled again close by, swearing loudly, and evidently in a great state of excitement. Of course I at once commenced to search for a nest, but could find none, and gave up the hunt to continue my way. I had gone only a few paces, however, when one of the birds returned, and, noting the exact spot whence it again flew away on my approach, I at last succeeded in finding the nest. It was built amongst a mass of twigs in a thick bush within a few inches of the bank, and was also partially hidden by fallen leaves and a creeper, which grew across it. The nest was in three quite distinct parts, the outermost being composed entirely of fine elastic twigs and coarse fern-roots, both strongly and closely interlaced one with another; inside this outer wall are more twigs and roots and a good many stems of small weeds, but all these materials are merely wound loosely round and round, and *not* interlaced one with another, just as is the true lining, which consists of very fine strips of grass. Two nests brought to me by natives very closely resembled this one already described, and were found in the same forest, all at an elevation of some 5800 feet. The only other nest I have seen was taken by myself from a clump of bamboos growing in mixed bamboo- and scrub-jungle, which had sprung up where the forest had first been cleared and the land cultivated and again abandoned. This nest differed somewhat from the others in that it had a certain number of fronds of fern-moss used in its construction.

The nests are all very strongly and compactly built, and in shape are rather more shallow than hemispheres, averaging outwardly some 4″ in diameter by 1″·63 in depth, whilst the cavity measures about 3″ by rather more than 1″.

All four nests were taken in the month of June. Three of these nests contained each three eggs, but I have only taken notes about two of these clutches, one having been given away before I either measured them or noted down details as to coloration.

The general character of the eggs of this Bulbul seems to differ from any other that I know in its strongly developed brown tinge; the ground-colour is a very pale pinkish white, but is decidedly suffused with pale vandyke at the larger end. The primary markings consist of rather bold spots and small blotches, ranging in colour from dark reddish brown to a deep purple, underlying which are others of pale grey and neutral tint, more or less mixed with a good many smears and blotches of very pale vandyke-brown. In four out of six there are also one or two fine long hair-lines at the larger end, of a very deep purple-black or clotted-blood colour. Writing from what I remember of the three eggs which I gave away, I think they were decidedly less brown in coloration, and they were also differently shaped, being somewhat lengthened ovals, those now in my possession being all rather broad ovals, with the smaller end very little compressed and decidedly blunt. The average size of the six eggs is 0″·84 × 0″·63, the greatest length and breadth being 0″·86 and 0″·65 respectively, and the least 0″·82 and 0″·60. The texture is fine and close, and the shell less fragile, perhaps, than are the eggs of most Bulbuls, but there is no gloss.

29. XANTHIXUS FLAVESCENS. (*Oates*, op. cit. i. p. 275.)

The nest of this Bulbul is very similar to one of *Molpastes* or *Otocompsa* that has been exceptionally neatly and compactly built and provided with an unusually luxuriant lining. The favourite materials consist of twigs, elastic dead stems of weeds, fern-roots, and tendrils of climbing plants, but always those are selected which are sound and fine, and, almost as invariably, such as are of a dark-brown colour. Less often a few dead leaves, fern-stems, or other similar articles may be used, but grass, bamboo-leaves, &c. appear never to be taken for the outer portion of the nest, although for the lining fine grasses are sometimes made use of, and very often indeed fine flowering ends which have been denuded of their seeds. The yellow colour of this grass, when used as a lining, often shows in very striking contrast to the dark colour of the outer nest. In diameter, both inwardly and outwardly, the nests average much the same as those of *Hemixus flavala*, already described, but they are much more shallow, none that I have seen exceeding 1″·5 in depth, and the majority being but little over 1 inch. All the nests seen *in situ* by myself were low down in thick bushes, and were uncommonly well concealed. Most nests were in thick clusters of twigs, not higher than 3 feet from the ground; one or two were built in similar clusters 4 to 5 feet up, and one or two others were placed in thick forks, also low down. Two nests brought to me, with one of the parent birds, which had been trapped on them, were said to have been taken from small saplings, and from situations 7 to 8 feet from the ground.

Blyth's Bulbul does not seem to mind much in what kind of country it breeds, for I have taken nests from scrub-jungle, scanty forest, or steep hillsides, from dense mixed forest and bush in ravines, and from small clusters of bushes almost in open ground. I do not think it ever breeds below 2500 feet, and more commonly over 4000. The normal number of eggs is two, rarely three. The ground-colour is a pale cream, generally *very* faint, never at all warm, with primary freckles and tiny straggly blotches of brownish pink, less often brownish red. The secondary marks consist of the same sort of freckles, but of a pale pinky grey, and at the larger end there are often a few very pale blurred clouds of neutral tint, giving a purple tinge to this part of the egg. In distribution the primary and smaller secondary markings are almost equally distributed, but are, if anything, more numerous at the bigger end, where also, in most eggs, they form a very well-defined ring. In some the freckles are equally very numerous over the whole surface of the egg, the secondary blotches coalescing with, and much hidden by, the superior and darker ones. In shape the eggs are long regular ovals—the longest, proportionately, of all the eggs of the Brachypodinæ. The shell is smooth, but glossless, and is extremely fragile, though more of a soft than brittle nature. Fourteen eggs average 0″ 94 × 0″·58, and the extremes in length are 0″·92 and 1″·00, and in breadth 0″·56 and 0″·60.

The birds breed principally in the end of May and June, but their eggs may be taken throughout July and not seldom as early as the latter half of April.

30. SPIZIXUS CANIFRONS. (*Oates*, op. cit. i. p. 280.)

The nest of this Bulbul cannot possibly be mistaken for that of any other, nor, indeed, do I know of any bird of any *other* family for whose nest it could be taken. The birds of the genus *Ianthocincla*, more especially *I. rufogularis*, build very similar nests, but, though the type is the same, their much greater size is alone sufficient to preclude all danger of wrong identification. The Finch-billed Bulbul, in selecting materials for building, scarcely ever takes anything but the tendrils of different climbing plants, and, considering their stiff and often rather unwieldy character, it is wonderful what a compact, stoutly made nest he manages to construct. Outwardly almost any kind of tendril which is sufficiently pliable is used, but for the inner part the bird seems to prefer the fine, but strong, tendrils of the small yellow ground-convolvulus, which are straight throughout four fifths of their length. As a rule there is no real lining, but in a few nests a withered scrap or two of bracken may be found, or even, more rarely, two or three bents or grass-stems. Outwardly it is difficult to give any precise measurements, for, from the very nature of the articles used, the ends stick out in all directions, but inwardly they average about 2¾ inches in diameter, by under 1 in depth. The contrast in colour is often very striking between the reddish-yellow convolvuli suckers and tendrils which form the inner portion of the nest, and the greenish- and greyish-brown ones which form the outer part.

Nearly all the nests I have taken have been placed in scraggy bushes and saplings at heights varying from 5 to 10 feet from the ground; they are generally fixed in between several upright twigs, less often in stoutish forks. One nest

I took in July, 1893, was placed quite low down in a coarse weed, and was visible from all directions at a distance of several feet. The bird is a close sitter, and does not leave the nest until one is almost touching it. Two seems to be the full complement of eggs, and I have seen a single egg hard-set. In all eggs the ground-colour is a pale pink, of the same delicate shade as in the eggs of *Xanthixus*. In some the surface is freckled all over with reddish, generally rather dull and dark, underlying which freckles are others of the same character, but of pale dusky and purplish neutral tint; at the larger end these markings are even more numerous than elsewhere, and generally tend to coalesce, forming a blurred ring or cap. In a few eggs, though the colour of the markings is the same, they are rather larger, becoming blotches more than mere specks and freckles. About four clutches I have seen were of a much paler type, the colour of the freckles being a pinky red, instead of the usual dull reddish, and these eggs were much like the most common type of egg of *Xanthixus flavescens*. In about half the eggs of both types there are a few lines, short and very fine, inside the ring at the larger end, and these are invariably of a dark tint, either reddish brown or the colour of clotted blood.

In shape the eggs are long regular ovals, and abnormal eggs tend to be even longer. The texture is the same as in the eggs of *Xanthixus*. Twenty-four eggs average 1″ × 0″·7. They vary in length between 0″·9 and 1″ 12, and in breadth between 0″·66 and 0″·73.

The birds breed principally in May and June. I have taken eggs as early as the 30th April, and others again as late as the 20th July. I have known of no nest taken below 4000 feet, and the majority I have taken were at an altitude of considerably over 5000.

31. IOLE VIRESCENS. (*Oates*, op. cit. i. p. 284.)

I have seen very few nests of this, the Olive Bulbul, and those which I have seen have been so precisely alike that a description of any one of them would do equally well for any of the others. They are of the same type of nest as that of *Molpastes bengalensis,* but are stouter, compacter, and much more bulky, owing to more material being used in their construction, and of the five nests I have seen none have been in the least degree transparent, as the nests of that bird so often are. The chief article used in each nest consisted of long tough strips of the inner bark of a dark-coloured tree, mixed with a few scraps of the outer bark and a good many twigs, the latter all very fine and elastic. In four nests there were also a good many small dead leaves fastened into the outside of the base and walls, and in all five nests numerous cobwebs were used, both to attach the nest to its support and to hold the materials together. The lining in each nest is formed of black fern-roots and of long reddish fibres, the tendrils of some creeper, probably the convolvulus already alluded to. In three nests the fern-roots form the greater part of the lining, in the others the tendrils. Outwardly the nests average in diameter about 4½ inches, and in depth about 2″·2, the measurements of the egg-cavity being about 2″·5 by 1″·1.

The first two nests I took were placed in forks formed by a number of twigs sprouting horizontally from a thin branch, which stretched well out and away from the parent bushes, very tall and straggly ones, the nests being some 4½ feet from the ground. Both nests were very firmly fixed to the twigs, a considerable portion of these being well covered by the materials with which the nests were made; both nests were visible from some yards away. Another nest was found in much the same position, and a fourth differed only in that it was placed in amongst a vertical bunch of twigs. Yet a fifth, which was *brought* to me, looked as if it had been placed in a stout upright fork.

All the nests were taken in the interior of low-lying forests, in most places rather scanty and with a considerable amount of straggling undergrowth, here and there interrupted by short stretches of sun-grass. The most noticeable thing about the nests was the extreme neglect of all concealment, they not only being built on branches devoid of foliage, but bushes being selected for the purpose which stood in comparatively open ground, in two cases just beside a well-worn gaur and buffalo track.

Three appears to be the full number of eggs laid, and these closely resemble many of *Molpastes bengalensis*; but, taken as a series, they are far brighter and more boldly marked than 99 in 100 of that bird.

Of the five clutches, three are much alike; the ground-colour is a creamy white, and the markings consist of small irregular blotches of rather light reddish, subordinate to which are others of pale lavender and equally pale brown. The primary markings are rather numerous everywhere, and extremely so on the larger end, where they form a broad ring, the blotches here running one into another; the secondary blotches are few in number, and are scattered here and there over the whole surface. A fourth clutch has the ground-colour slightly darker, and it is thickly covered everywhere with specks, spots, and large blotches, which vary in colour from a dark reddish purple to a purple so deep as to appear almost black. The secondary blotches, which are few in number, are rather dark inky grey in colour. The fifth clutch differs in wanting the freckles and spots of the last, and in being rather more brightly tinted, the absence of the smaller markings heightening the effect of the others. The texture is smooth and close, and there is a slight gloss. The shell is stout and strong, more so than any other Bulbul's eggs I know, with the exception of *Criniger flaveolus*.

Fourteen eggs average 0″·87 × 0″·58. The greatest length and breadth is 0″·91 and 0″·60 respectively, and the least both ways is 0″·84 and 0″·56.

All my eggs were found in May, and, with the exception of one nest taken at about 1000 feet, all were found at a very low level.

32. MICROTARSUS MELANOCEPHALUS. (*Oates*, op. cit. i. p. 294.)

The only nest I have seen of this bird was one I took on the 12th of May, 1891, at an elevation of some 1600 feet.

The nest itself was very similar in appearance &c. to many of *Molpastes bengalensis,* differing principally in being somewhat more neatly and stoutly built than the majority of nests of that species. Outwardly it was composed of the tough flat stems of a species of wild bean, with, here and there, a soft pliant twig or coarse strip of sun-grass, the first-mentioned material predominating and giving the general grey-brown hue to the nest. The neat but scanty lining consisted of fine sienna-coloured grass-stems and a single skeleton leaf. The nest measured in diameter outwardly about 4″ by about 3″ inwardly, and the depth about 2″·2 by 1″·4.

It was very strongly attached to three strong shoots of a young sapling growing in the centre of a thorny bush, even when removed still holding well together, in spite of being thoroughly soaked by the heavy rain which had fallen for some days previously. The eggs, which were three in number and slightly incubated, can also be matched by many of *M. bengalensis.* The ground-colour is a pale fleshy pink, the markings consisting primarily of freckles and large and small blotches of reddish and purplish brown, and secondarily of others of pale dull inky. A few of the superior blotches are very large, some measuring as much as from 0″·1 to 0″·3 in length by more than half as broad.

In two eggs both kinds of markings are very numerous, and are very equally distributed over the whole surface of the egg, but in the third egg the primary markings are far less plentiful. The three eggs measure 0″·97 × 0″·65, 0″·96 × 0″·60, and 0″·93 × 0″·64.

In shape they are long ovals, somewhat pointed, though not much compressed at the smaller end. With the exception of having a slight gloss, the texture of the egg does not differ from that of the eggs of the genus *Molpastes.*

33. MICROTARSUS CINEREIVENTRIS. (*Oates,* op. cit. i. p. 295.)

Of this bird also I have seen but one nest, which in every respect resembled that of *M. melanocephalus,* already described, and which was found in the same valley and on the following day. It was placed in a low scrubby bush, hardly more than two feet from the ground, but, being surrounded by rather dense cane-brake, was got at only with considerable difficulty. It contained three young, a day or two old.

XIX.—*On a new Species of* Xenicus *from an Island off the Coast of New Zealand.* By Sir Walter L. Buller, K.C.M.G., D.Sc., F.R.S.

(Plate VII.)

Projecting into Cook's Strait as a bold and salient point from the eastern shore of Blind Bay, and rising to a height of 2180 feet, is D'Urville Island, presenting a very broken and partially wooded surface. With a width of from five to six miles, it stretches away 17 miles to the northward, whilst to the south it is separated from the mainland by a very narrow channel known as the French Pass.

Lying two miles to the north-eastward of the northern extremity of D'Urville Island, and rising abruptly from the sea to a height of a thousand feet, is Stephens Island, only about a square mile in extent, and more or less wooded on its sides. From this island I have lately received a single specimen of a new species of *Xenicus*, entirely distinct from the two forms (*X. longipes* and *X. gilviventris*) inhabiting the mainland.

I have described this new bird, which may fittingly be called the Island-Wren, as distinguished from our Bush-Wren and Rock-Wren; and as these island-forms present features of special interest to the student of geographic zoology, I am forwarding the specimen itself in the hope that it may be figured.

My correspondent on the island informs me that the bird is semi-nocturnal in its habits, and that he has seen two other examples, all three of them having been brought in at different times by the cat.

I hope shortly to receive further specimens of this interesting form. In the meantime I regret that I am unable to

give the sex of the bird here described. In plumage it differs conspicuously from the other two species, and it has a decidedly more robust bill, whilst the claw on the hind toe is not larger than in *Xenicus longipes*.

Xenicus insularis, sp. nov. (Plate VII.)

Upper surface generally dark olive, with brown margins to the feathers, presenting an obscurely spotted or mottled appearance; a minute whitish spot in front of and another underneath the eye; a narrow superciliary streak and the whole of the throat, fore neck, and breast, as well as the wings at their flexure, olivaceous yellow with darker margins; wings and tail, sides of the body, abdomen, croup, and under tail-coverts olivaceous brown. Plumage underneath plumbeous. Upper mandible dark brown with horn-coloured tip; under mandible, legs, and feet pale brown. Length 4 inches; wing from flexure 2; tail 0·75; bill along the ridge 0·75, along the edge of lower mandible 0·75; tarsus 0·75; middle toe and claw 1, hind toe and claw 0·7.

Hab. Stephens Island, Cook's Strait, N.Z.

XX.—*On Birds observed in Iceland in* 1894, *with a List of the Species hitherto recorded therefrom.* By Henry J. and Charles E. Pearson.

The localities which have not been explored by British ornithologists are becoming so few that a short account of our expedition to the Southern Fiskevötn of Iceland—a district, we think, not before visited by Englishmen—may prove of interest.

We left Reykjavik on June 14th, 1894, with three men and 27 ponies, and arrived at Galtalœkur, the last farm in this direction, on the 16th. Here we engaged a local guide, Kristofer Jörnsen (recommended by Mr. Nielsen, of Eyrarbakki), who proved to be a most capable man, though, unfortunately, he could not speak English. We left Galtalœkur on the 17th and reached Audavatn, our camping-place in the Fiskevötn, at 8 P.M. on the 18th—a ride of 22 hours, during which there were only three places where our ponies could obtain grass, all the rest being black sand and lava. It is difficult to convey any idea of the utter desolation of this district; from hills of several hundred feet elevation there often was no green thing to be seen in any direction. Varieties of blackness occurred; sometimes black sand only, at others the ground for a mile or more looked like a macadamized road rather loosely laid, the stones all one size, about 1½ inch. in diameter. If these fragments of lava had been first passed through a riddle, they could not have been more accurately assorted. The wind had, no doubt, winnowed away the sand until the pieces of lava amongst it, which were too large to be moved, practically covered the whole surface; but we cannot explain why the fragments should only vary in size so slightly over an area of several square miles. Then, again, we had long stretches of sharp rough lava, which only the feet of an Iceland pony could pass over without being hopelessly lamed. After riding through such a country we looked upon Audavatn as an oasis in the desert; its shores were fairly green, and our ponies, now increased to 30, were able to find grass enough for six days. This lake had more bird-life about it than all the others of the group combined. A pair of White-tailed Eagles had their eyrie on a rock rising out of the lake; it was placed about 30 feet above the water, and contained two young in down, one being nearly twice as large as the other. During our visit the smaller one disappeared: how, we never learned, for our men had strict orders not to touch them, and we believe no reward is paid for killing these birds in Iceland. The men's explanation was that this Eagle never rears more than one young, and had killed the smaller one, a statement that seems very improbable. A pair of Whooper Swans were generally to be seen on our lake, but the old nest on a small island showed no sign of their having commenced nidification. There were many pairs of Long-tailed Duck, also several of Wild Duck and also Goosander. Nine males of Barrow's Golden-eye and one female were always there, but this was the only lake where we saw this species. A pair of Great

Northern Divers had eggs upon a small detached rock. Arctic Terns were plentiful; and, as we generally found elsewhere, a few pairs of Richardson's Skua were in attendance on them to profit by their work. Two nests of the Snow-Bunting, with eggs, were found in the lava close to our tent. Red-necked Phalaropes were the commonest birds there, and so very tame that we often had 20 or 30 within a few yards of us, apparently as little disturbed by our presence as a group of London Sparrows would be; they are certainly one of the most charming and graceful species to be found in northern latitudes.

The Purple Sandpiper, Rock-Ptarmigan, Greater Black-backed Gull, White Wagtail, and Meadow-Pipit complete the list of birds we observed there; and when most of these varieties were in sight at one time, on the only fine evening we had at Audavatn, they formed a very interesting ornithological picture. The list of birds seen on this lake includes all the species we saw in the district. The fish also were good; the first night that Kristofer set his net in a narrow channel under the "Eagle" rock he caught six char, the longest of which was 22 inches and the shortest 17 inches. Several other lakes contained fish and had birds on their islands, but not in nearly the same number or variety. About half the lakes, however, were without life; nothing green on their shores, no fish in them, and no birds on them. Stgrisjor, a lake in this district, formed an especially striking picture as we saw it from the summit of a low hill. It stretched away into the distance for about three miles, the mist concealing the end from us, and was bordered on either side by hills, composed of black sand and small fragments of lava, rising to the height of two or three hundred feet. The outlines of the nearer hills were broken in a few places by dark volcanic rock projecting through the sand. Beyond them rose the white masses of the Vatna Jökull. Below us were a wild Swan and two Arctic Terns; a few coarse grasses growing near formed the only green. Round Audavatn flies were in force, and were such a nuisance during the few fine warm hours we had there as to almost reconcile us to the snowstorms and cold rain we experienced during most of our visit. In fact the cold was so severe on several nights that we were glad to sleep in four suits of flannels besides our blankets, although we had a tent lined with thick blue serge; and as this district is nearly surrounded by large masses of snow-covered mountains, the weather must be always uncertain in early summer. No map to be procured in this country shows these lakes accurately, but Herra Th. Thoroddsen, of Reykjavik, published one in 1889 which gives a good general outline of them. A place marked Skalar on our maps really consists of two old lava-rifts, which were once partly roofed in; we had hoped it represented a farm! Our guide Kristofer had been to this district once or twice every year for the last thirty years to look for strayed sheep and to fish, so that he knew all the lakes where there was any chance of finding birds. Nearly all the eggs we obtained were from islands, and, as no boats were available, the india-rubber boat used in Norway last year was of great service; it was carried on a pony without the slightest trouble or damage. On the 27th we crossed the Tunguâ, a swift river nearly as wide as the Thames at Hammersmith (though the water did not cover our saddles), and camped for two days at Laugar under the Torfajökull. This valley had been a centre of great volcanic activity, and contained a number of hot springs and hot sulphur-pits. We found a Whooper-Swan's nest with one egg and a Wild Duck's nest with six near the hot springs, but most of the eggs were addled. On the lakes near were a few Great Northern Divers and Long-tailed Ducks; also large numbers of Arctic Terns. Streams of lava had been erupted from the sides of the hills in several places. Our tent was pitched at the base of one, which was about a mile and a half long, and was covered in most places with moss a foot thick; but other streams were quite black and bare, as if they had only recently cooled. The district was more interesting to the geologist than to the ornithologist. The general result of our expedition was disappointing, and we certainly should not advise any members of the B. O. U. to visit this part of Iceland, for it is not worth either the trouble or expense. The whole country from the Pjórsá River to the Vatna Jökull has not recovered from the numerous volcanic eruptions to which it has been subjected, and the greater part is practically without life of any description. We took the eggs of 23 species and procured those of 21 others. C. E. P. returned direct to Reykjavik; and the rarer eggs obtained by H. J. P. in other parts of the south of the island are mentioned in the following list.

It may save some annoyance to those who propose to visit Iceland to know that a law has recently been passed there making it illegal to land dogs of any breed. By some accident a rough-haired terrier we took escaped the notice of the authorities; but a setter, brought by a gentleman on the next steamer, had to remain on board. Unfortunately, our dog had left at home all idea of putting up birds, and although he found two nests of Harlequin Duck, this was rather small compensation for the many hours he had to be carried on the saddle or in a knapsack when crossing the lava. The dates when eggs were procured may be of service to those who propose to visit the island, and we have appended, as far as possible, a list of the Icelandic names of birds for the same purpose, because we found in so many instances that the Latin names now used in this country were not known to ornithologists there. Perhaps in some future and more happy generation each bird will have one scientific name by which it can be universally recognized!

We ought not to close this article without expressing our appreciation of the kind hospitality and assistance we received from Mr. Nielsen, of Eyrarbakki, a gentleman known by name to many English ornithologists. He has an interesting collection of eggs, and is a keen and careful observer. It was from him that Mr. Walter Raine obtained the two reputed eggs of the Knot mentioned and figured in his book on Bird-Nesting in North-west Canada. The nest with four eggs was found in 1890 by Jón Jakogsón at Kaldadarnes, near Eyrarbakki, who saw the bird but failed to secure it. Mr. Nielsen has the third egg; the fourth was broken. The one we examined was very distinct in shape, and of a pale emerald-green colour, rather closely and uniformly covered with fine red spots.

We wish also to acknowledge with thanks our indebtedness to Mr. Benedict Gröndal, the curator of the Museum at Reykjavik, who has given us material help in revising the list of Icelandic birds.

TURDUS ILIACUS. Redwing.

These birds were plentiful in all suitable localities. We saw more of them in one day near the geysirs than we had observed during the whole of three visits to Norway. All the nests found were placed on the ground, some amongst the stems of dwarf birch, others among rocks, although in several instances the birch bushes near were dense enough to have concealed a nest. Most of the young birds had left the nests before June 16th, only one nest of young being seen on July 3rd and one of four eggs (fresh) on July 19th.

PLECTROPHANES NIVALIS. Snow-Bunting.

Certainly the commonest of the small birds in the districts near the lava. Nests with fresh eggs were found from 18th to 29th June; but we had seen a nest of young birds on the 16th, placed on the side of a small mound in a large plain covered with coarse grass, where the climate was evidently rather milder than in those districts where we took fresh eggs. We found many nests in holes of the lava, generally placed about two or three feet in. The lava-flow had enclosed large bodies of steam or gas, which formed bubbles or small caves, and these were often occupied by the birds. In one case a bird disappeared into a small hole in the level ground, leading into one of these bubbles; within was placed the nest containing young. In some instances, where the lava was too hard to permit of the hole being enlarged, the nest could be drawn out only with the help of a piece of bent wire.

FALCO ÆSALON. Merlin.

Eggs nearly fresh were brought to us on July 11th.

Anser cinereus. Grey Lag-Goose.

Eggs were taken on the 1st, 2nd, and 3rd of July, but all were incubated or addled, and a number of young were seen on those dates. On the 3rd H. J. P. shot the old bird on a nest containing four eggs much incubated. These birds were plentiful on the islands in the Pjórsá River, and in many places we were able to carefully examine them through our glasses. We never saw any other species of Goose in Iceland.

Cygnus musicus. Whooper Swan.

This was the only species of Swan we observed. Eggs were taken on June 20th and 28th, but the weather among the hills had been so bad this spring that several pairs were only commencing to prepare their nests about the latter date. We afterwards saw a clutch of seven eggs, which had been recently taken. Although these birds sometimes breed on islands in the inhabited districts, it is little use to look for their eggs before you pass the "last farm," as they are generally taken either to eat or sell. Many of the farmers collect the rarer eggs to sell to merchants at the trading ports, so that Iceland is not quite the happy hunting-ground it must have been at one time.

Anas boscas. Wild Duck.

Nests with fresh, or nearly fresh, eggs were found from June 28th to July 12th.

Fuligula marila. Scaup.

Although this bird is plentiful in some districts of the south, it does not abound there in the manner described by the Rev. H. H. Slater in his article on the northern parts of the island. The greatest number of nests found in one day (July 7th) was 12. The eggs we took were nearly fresh, but most of the nests were well lined with down. In one or two instances we saw the male assisting the female in the charge of the young on the water.

Cosmonetta histrionica. Harlequin Duck.

Little appears to be known about the nesting-habits of this bird, even by the natives, for they rarely find the eggs. The species is one of the latest of the Ducks to breed, our first eggs being taken on July 1st, and fresh eggs were brought to us on the 18th. Generally speaking, the nest is placed within 6 feet of the water, a rapid stream being preferred. On the 11th July H. J. P. visited some islands in a river, the remains of an ancient flow of lava. The lava had formed a dam across the river, which had afterwards broken through, forming four channels, and down these the water ran like a mill-race, so that it was difficult to find a place where even Iceland ponies could cross. On these islands were six nests with eggs; three of them only 2 feet from the water, and placed under the leaves of wild angelica; the others in holes of the banks close to the water and protected by a screen of trailing plants. Most of the nests contained but little down, though some of the eggs were much incubated. The down of this Duck is much larger than that of most other species we have taken, individual pieces having sometimes a diameter of about 1⅜ in. There were also many old nests in these holes, showing the islands to have been a favourite breeding-place for years. The dog put the duck off a nest of seven eggs on the 9th, which was placed about ten yards from the water under a birch bush; but we feel sure this is a very unusual distance from water. Flocks of more than 30 males were seen together on several occasions and formed a beautiful picture; some sitting on the rocks, and others swimming among rapids that few other birds would care to frequent.

HARELDA GLACIALIS. Long-tailed Duck.

One of the commonest Ducks in the Southern Fiskevötn. We found eggs from June 20th to July 18th, most of the nests being placed on islands. On the 20th we flushed the bird from a nest of six eggs, which was several hundred yards from the water, on a bare hill-side of black sand; there was no material in the nest except down, the black colour of which would form a perfect protection when the Duck covered the eggs with it in the ordinary course. Not one of the many nests observed was placed in a hole, but they were often in a hollow between two mounds of grass. In such situations the outer part was always of grass, and the bird carefully covered the eggs with this material on leaving, sometimes forming a splendid imitation of an old nest! The only safe rule is to put your hand well to the bottom of every nest, whether it looks fresh or old.

Mergus merganser. Goosander.

We found a nest of 15 eggs on an islet on June 21st, and thought these were the produce of two females; because two nests of *Harelda glacialis,* a few feet off, also contained eggs of this species, and it seems probable that, when No. 2 duck found No. 1 in possession of the common nest, she placed her egg in the charge of one of the Long-tailed Ducks. We also took eggs on the 15th and 26th.

Mergus serrator. Red-breasted Merganser.

Nest of nine eggs taken June 15th.

Phalaropus hyperboreus. Red-necked Phalarope.

We obtained a good series of these eggs between June 14th and 26th showing some interesting variations of colour. We never saw *P. fulicarius* in any part of the south, and heard that no eggs had been taken there for two or three years.

Gallinago cœlestis. Common Snipe.

We observed young on June 15th and took fresh eggs on July 15th.

Limosa ægocephala. Black-tailed Godwit.

We received four clutches of these eggs, and the birds evidently breed rather plentifully in some parts. On July 2nd C. E. P. saw 20 birds in a marsh about a day's journey from Reykjavik, and from their behaviour they probably had young near.

Larus marinus. Greater Black-backed Gull.

H. J. P. took incubated eggs on July 3rd on an island in the Pjórsá River. The farmer requested him to shoot all the old birds he could, because they killed the young lambs, being greater sinners in this respect than even the Ravens;

yet the man never attempted to kill the young birds that he caught! It was curious to see the young in down take to the river and pass safely through rough water to an island nearly a mile down stream.

COLYMBUS GLACIALIS. Great Northern Diver.

Fresh eggs were taken on June 19th, 21st, 23rd, and July 12th. We shot a fine male on July 24th, and on returning to the lake on the 26th found two males courting the widow. They constantly made a peculiar and rather pleasing trumpeting note, which could be heard for a considerable distance.

List of Birds hitherto recorded from Iceland.

[Birds marked N are recorded by Prof. Newton in Baring Gould's book on Iceland. Birds marked * not known to breed in Iceland.]

Turdus iliacus. Redwing. (Skógarpröstur.) N.

*_Turdus pilaris._ Fieldfare.—B. Gröndal. At Reykjavik, 6/12/85.

*_Turdus merula._ Blackbird. (Svartpröstur.)—Rare. N.

Saxicola œnanthe. Wheatear. (Steindepill.) N.

*_Ruticilla titys._ Black Redstart.—By Preyer, 17/6/00, in Videy: only recorded instance. N.

Troglodytes borealis. Northern Wren. (Músarrindill, Musarbródir.) N.

Motacilla alba. White Wagtail. (Maríuerla, Máríatla.) N.

Anthus pratensis. Meadow Pipit. (Púfutitlingur, Grátitlingur.) N.

*_Hirundo rustica._ Swallow. (Svala, Landsvala.)—Rare. N.

*_Chelidon urbica._ Martin. (Svala, Bæjarsvala.)—Rare. N.

Linota linaria. Mealy Redpole. (Audnutitlingur.) N.

*_Linota hornemanni._ Greenland Redpoll.—Rare.

Calcarius lapponicus. Lapland Bunting. (Injótitlingur.) N.

Plectrophanes nivalis. Snow-Bunting. (Snjótitlingur, both sexes; Sólskríkja, male.) N.

*_Sturnus vulgaris._ Starling. (Starri—the name in the Edda, but too rare to be known by the people.)—Rare.

*_Corvus monedula._ Jackdaw. (Kráka.)—Rare. Shot by Nielsen near Eyrarbakki.

*_Corvus corone._ Carrion Crow. (Kráka, Færeyja-Hrafn.)—Rare.

*_Corvus cornix._ Hooded Crow. (Kráka.)—Rare. One obtained at Seydisfjord. N.

*_Corvus frugilegus._ Rook. (Kráka.)—Rare. Shot by Nielsen near Eyrarbakki.

Corvus corax. Raven. (Hrafn, Krummi.) N.

*_Asio brachyotus._ Short-eared Owl. (Trjáugla, Mýri-Ugla.)—Rare. Shot by Nielson 5/10/77 and 30/9/79 near Eyrarbakki. N.

*_Nyctea scandiaca._ Snowy Owl. (Snjóugla.) N.

Haliaëtus albicilla. White-tailed Eagle. (Örn, Sæörn.) N.

*_Hierofalco candicans._ Greenland Falcon. (Fálki, Valur.) N.

Hierofalco islandus. Iceland Falcon. (Fálki, Valur.) N.

Falco æsalon. Merlin. (Smirill.) N.

Phalacrocorax carbo. Cormorant. (Dílaskarfur, Utilegurkarfur in west of Iceland.) N.

Phalacrocorax graculus. Shag. (Toppskarfur, Hrankur in west.) N.

Sula bassana. Gannet. (Sula, Hafsúla.) N.

*_Ardea cinerea._ Heron. (Hegri.) N.

Anser cinereus. Grey Lag-Goose. (Grágæs.)

Anser brachyrhynchus. Pink-footed Goose. (Grágæs.)

Anser albifrons. White-fronted Goose. (Gragæs, Helsingi: see note at end.) N.

*_Bernicla brenta._ Brent Goose. (Margæs, Hrota, Hrotgæs.)—Shot by Nielsen 20/10/78, 28/9/80, 8/5/81. N.

*_Bernicla leucopsis._ Barnacle Goose. (Helsingi.) N.

Cygnus musicus. Whooper Swan. (Alpt, Svanur.) N.

*_Tadorna cornuta._ Common Sheldrake. (Andakóngur).—Shot in Hafnarfjördur, 27/1/94; only record.

*_Tadorna casarca._ Ruddy Sheldrake.—Three shot near Eyrarbakki, Aug. 1892, Nielsen. Also some procured in north of Iceland about same date.

Mareca penelope. Wigeon. (Raud-dufu-önd.) N.

Dafila acuta. Pintail. (Grasönd, Lángvíu-Gráönd.) N.

Anas boscas. Wild Duck. (Stóra-Stokkönd, Blákollsönd in west.) N.

Chaulelasmus streperus. Gadwall. (Litla gráönd.)

Querquedula crecca. Common Teal. (Urtönd, Urt.) N.

Fuligula marila. Scaup. (Dukönd in north, Hrafnsönd in south.) N.

*_Fuligula ferina._ Pochard. (Randhöfdaönd.) Shot by Gehin on Thingwalla Lake, 20/6/60. N.

Nyroca ferruginea. White-eyed Duck.—By Faber, May 1820, and March 1821; the only record.

Clangula glaucion. Golden-eye.—Observed and afterwards procured by the Rev. H. H. Slater at Mývatn.

Clangula islandica. Barrow's Golden-eye. (Husönd.) N.

Cosmonetta histrionica. Harlequin Duck. (Straumönd, Brimönd, Brimdúfa.) N.

Harelda glacialis. Long-tailed Duck. (Hávella, Fóvella.) N.

Somateria mollissima. Eider Duck. (Ædarfugl, both sexes; Bliki, male; Ædur, female.) N.

*_Somateria spectabilis._ King Eider. (Ædarkóngur.) N.

Œdemia nigra. Common Scoter. (Hrafnsönd.) N.

Mergus merganser. Goosander. (Gulönd, Stóra-Toppönd, Grafönd.) N.

Mergus serrator. Red-breasted Merganser. (Litla Toppönd, Fiskönd, Vatnsönd.) N.

Lagopus rupestris. Rock Ptarmigan. (Rjúpa, female; Kjeri, Kari, male.) N.

Rallus aquaticus. Water Rail. (Keldusvín.) N.

•*Gallinula chloropus.* Moorhen.—Vestmann Isles, 5/4/82.

Fulica atra. Coot. (Blesönd.) N.

Charadrius pluvialis. Golden Plover. (Lóa, Heidló.) N.

•*Squatarola helvetica.* Grey Plover.—Shot by Nielsen at Eyrarbakki 25/9/92.

Ægialitis hiaticula. Ringed Plover. (Sandlóa.) N.

•*Vanellus vulgaris.* Lapwing. (Vepja, Isa-Kraka.) N.

Strepsilas interpres. Turnstone. (Tildra.) N.

Hæmatopus ostralegus. Oyster-catcher. (Tjaldur.) N.

Phalaropus hyperboreus. Red-necked Phalarope. (Ódinshani.) N.

Phalaropus fulicarius. Grey Phalarope. (Pórshani.) N.

Gallinago cœlestis. Common Snipe. (Hrossagaukur, Mýriskítur, Myrispíta.) N.

Tringa alpina. Dunlin. (Lóuproell, Loproell.) N.

Tringa striata. Purple Sandpiper. (Sendlingur, Selningur.) N.

Tringa canutus. Knot. (Raudbrystíngur.) N.

•*Machetes pugnax.* Ruff.—Unknown, except a female observed near Reykjavik, Sept. 1820, by Faber. N.

Calidris arenaria. Sanderling. (Sanderla.) N.

Totanus calidris. Redshank. (Stelkur.) N.

Limosa ægocephala. Black-tailed Godwit. (Jadrakan, Jadreki.) N.

•*Numenius hudsonicus.* American Whimbrel. N.

Numenius phæopus. Whimbrel. (Spói.) N.

•*Numenius arquata.* Curlew. (Stóri spói.) N.

Sterna macrura. Arctic Tern. (Kría, Perna.) N.

•*Sterna dougalli.* Roseate Tern.—Near Reykjavik, July 2nd, 1880. Nielsen.

•*Pagophila eburnea.* Ivory Gull.—Rare.

Rissa tridactyla. Kittiwake. (Rita, Ritsa, Skegla.) N.

Larus glaucus. Glaucous Gull. (Grámáfur.) N.

•*Larus leucopterus.* Iceland Gull. (Hvitmáfur.) N.

•*Larus canus.* Common Gull. (Máfur.) N.

•*Diomedea chlororhyncha* (Temm.).—Vestmann Isles, 1837, now in Museum at Copenhagen.

Larus marinus. Greater Black-backed Gull. (Svartbakur, Veidibjalla, Kaflabringur.) N.

Stercorarius catarrhactes. Common Skua. (Skúmur, Hafskúmur, Hákallaskúmur.) N.

?**Stercorarius pomatorhinus.* Pomatorhine Skua. (Kjoí.) N.
Stercorarius crepidatus. Richardson's Skua. (Kjoí.) N.
?**Stercorarius parasiticus.* Buffon's Skua. (Kjoí.) N.
Procellaria pelagica. Storm Petrel. (Drúdi.) N.
Procellaria leucorrhoa. Leach's Petrel.
**Puffinus major.* Great Shearwater. (Stóra-Skrofa.) N.
Puffinus anglorum. Manx Shearwater. (Litla-Skrofa.) N.
**Puffinus obscurus.* Dusky Shearwater. Recorded by Rev. H. H. Slater.
Fulmarus glacialis. Fulmar. (Fýlungur, Fýll.) N.
Colymbus glacialis. Great Northern Diver. (Himbrimi, Brúsi.) N.
Colymbus septentrionalis. Red-throated Diver. (Lómur.) N.
Podiceps griseigena. Red-necked Grebe.—Rare. One taken at Keflavik, December 1885. B. Gröndal.
Podiceps cornutus. Horned Grebe. (Flórgodi, Sefönd, Flódseti, Flóaskítur, Flódskítur.) N.
Alca torda. Razorbill. (Álka, Klumba, Klumbunefja, Drunnefja.) N.
Alca impennis. Great Auk. (Geirfugl.) N.
Lomvia troile. Common Guillemot. (Lángvía, Lángnefja.) N.
Lomvia bruennichi. Brünnich's Guillemot. (Stuttnefja.) N.
Uria grylle. Black Guillemot. (Teista, Peísta, Pjeturskofa; young birds, Peístukofa.) N.
Mergulus alle. Little Auk. (Haftirdill.) N.
Fratercula arctica. Puffin. (Lundi; young birds, Lundakofa.)
=108 species.

NOTE.—Prof. Newton says that *Anser albifrons* is known as Helsingi, but Nielsen states this name applies only to *Bernicla leucopsis.* Nordenskiöld, in 'The Voyage of the Vega,' speaks of *B. leucopsis* as the White-fronted Goose; so that the greater amount of white on the head of the latter species appears to have secured its right to this title among northern people.

XXI.—*On the Birds of the Philippine Islands.*—Part IV.* *The Province of Albay, South-east Luzon, and the adjacent Island of Catanduanes.* By W. R. OGILVIE GRANT. *With Field-Notes by* JOHN WHITEHEAD.

SINCE the January number of 'The Ibis' appeared another large collection of birds has arrived from that indefatigable collector Mr. J. Whitehead, including about two hundred bird-skins, of which three were perfectly new to science. During the first month of this expedition Mr. Whitehead collected near some mountains in the neighbourhood of Tobacco, in the province of Albay, which is situated in the extreme south-east of Luzon. There, however, he obtained very few specimens, for, being a great hemp-growing district, most of the forests had been cleared and bird life was extremely scarce, but it was here that he obtained all his specimens of the splendid green Fruit-Pigeon (*Carpophaga poliocephala*) now recorded for the first time from Luzon. Thence he shifted his camp to the foot of the Mayon volcano, remaining there for some three weeks; but there again birds were far from common, though it was on this collecting-ground that the yellow-green Silver-eye (*Zosterops luzonica*) was obtained. During the whole of this trip, which spread over the last part of July and the months of August and September, almost incessant rain greatly increased the difficulties of collecting; and, to add to Mr. Whitehead's troubles, most of the birds were in full moult at this season and difficult to make into good cabinet-skins, though specially interesting from our point of view as showing the changes of plumages.

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* Part I. Ibis, 1894, pp. 406–411; Part II. *ibid.* pp. 501–522; Part III. Ibis, 1895, pp. 106–117.

In the beginning of September the first of the migrants had begun to arrive, in the shape of the Asiatic Golden Plover, which still had the greater part of the breast mixed with the black breeding-plumage; but Mr. Whitehead did not devote much time to the Waders, and on the 7th of September he set sail in a small boat for the adjacent island of Catanduanes, and after collecting there for a month returned to Manila. The only animals obtained were a few Bats, and we hear that Mammals are extremely scarce in every part of Luzon that Mr. Whitehead has visited. Of Reptiles and Fish a small collection was made, but contained nothing of special interest; and there was also a considerable collection of Insects belonging to various orders.

Mr. Whitehead has made some interesting remarks on the habits of *Rhabdornis mystacalis*, from which it appears that this bird's mode of life and habits are extremely like those of the Spider-hunters (*Arachnothera*), the greater part of its time being spent in searching the flowers for insects. Nor is the resemblance in habits the only point he notes, for he sends me the tongues of two examples in spirits, and, as may be seen from the accompanying figure, the tongue is bifid and largely provided on the sides with cirriform appendages, giving this organ a very brush-like appearance. I am not at present prepared to express an opinion as to the importance of this character, though, from the cursory examination I have made of the structure of the tongue in various genera allied to *Rhabdornis*, I am inclined to believe that some important results may be obtained by a careful examination of this organ which may assist in the better arrangement of the Passeres.

It is gratifying to observe that my papers in 'The Ibis,' based on the results of Mr. Whitehead's former collections, have at last had the effect of inducing our American friends, Messrs. F. S. Bourns and D. C. Worcester, two of the naturalists who accompanied the second Steere expedition to the Philippines, to publish the long-expected paper descriptive of the results of their collecting trip. This "Occasional Paper" forms the first in the first volume of a new scientific publication issued by the Minnesota Academy of Natural Sciences. Here we find no fewer than 36 new species described, a list of known species with localities not previously recorded, and additional notes on previously described birds.

SPILORNIS HOLOSPILUS (Vig.); Grant, Ibis, 1894, pp. 407, 503.

Specimens were obtained both in the district of Albay and at Catanduanes.

HALIASTUR INTERMEDIUS, Gurney; Grant, Ibis, 1894, p. 407.

An adult female was shot at Catanduanes.

PERNIS PTILONORHYNCHUS (Temm.); Grant, Ibis, 1894, p. 503; 1895, p. 108.

Another immature female from Albay.

CORONE PHILIPPINA (Bonap.); Grant, Ibis, 1894, p. 504.

A perfect albino specimen was obtained at Catanduanes.

ORIOLUS CHINENSIS, Linn.; Grant, Ibis, 1894, p. 407, and 1895, p. 108.

Five adult specimens from Albay district and Catanduanes agree with the more southern examples of this species in having the yellow patch on the forehead scarcely extending beyond the anterior margin of the eye, and in this respect differ from the specimen already mentioned from Mt. Arajat, Central Luzon.

DICRURUS BALICASSIUS (Linn.); Grant, Ibis, 1894, pp. 408, 505.

An immature male from Albay district.

PERICROCOTUS NOVUS, Wardlaw-Ramsay; Grant, Ibis, 1895, p. 109.

Another adult male was obtained at Albay, and also a female; but unfortunately Mr. Whitehead was unable to preserve the latter specimen, which was in full moult.

LALAGE MELANOLEUCA (Blyth); Sharpe, Cat. B. Brit. Mus. iv. p. 91 (1879).

The adult and immature female of this species were obtained in Albay district.

LALAGE TERAT (Bodd.); Sharpe, Cat. B. Brit. Mus. iv. p. 95 (1879).

Adult specimens were obtained both at Albay and Catanduanes.

MUSCICAPA GRISEISTICTA (Swinh.); Grant, Ibis, 1894, p. 408.

A male in moult was collected in September at Catanduanes.

RHIPIDURA CYANICEPS (Cassin); Grant, Ibis, 1894, p. 506.

A male from Albay district.

RHIPIDURA NIGRITORQUIS, Vigors; Sharpe, Cat. B. Brit. Mus. iv. p. 334 (1879).

Obtained both in Albay district and in Catanduanes; specimens dated the 22nd August are still in full moult.

CALLAEOPS, Grant, Bull. B. O. C. no. xxiii. p. xviii, and no. xxiv. p. xxii (1895).

A new genus of *Muscicapidæ* most nearly allied to *Arses*, which it resembles in having a disk-like wattle formed by the prolongation of the eyelid, which entirely surrounds the rather large eye. As in *Terpsiphone*, there is a large, full occipital crest, and the tarsi and toes are short and slender; but the tail is like that of *Rhipidura*, wedge-shaped, and composed of 12 feathers, the outer pair being $\frac{2}{3}$ of the length of the middle pair. The first flight-feather is half the length of the second, which is about equal to the tenth; the fourth being slightly the longest.

The only known species of this peculiar genus is

CALLAEOPS PERIOPHTHALMICA, Grant, Bull. B. O. C. no. xxiii. p. xviii (1895).

Adult male. General colour deep black with a slight purplish gloss, especially on the back and breast; the middle of lower breast and belly white, the under tail-coverts being edged with the same colour. Wattle surrounding the eye, bill, and feet said to be pale blue. Total length 8·5 inches, wing 3·5, tail 4·5, tarsus 0·6. The only specimen sent home by Mr. Whitehead was not of his own collecting, but purchased in Manila and, as I understand, said to have been obtained in that vicinity. The colour of the soft parts and sex are, I fancy, only given on the authority of the collector from whom the bird was obtained.

SIPHIA PHILIPPINENSIS (Sharpe); Grant, Ibis, 1894, pp. 408, 507.

Two specimens were obtained in Albay district on the 26th of August and the 2nd of September, both in full moult.

POLIOLOPHUS UROSTICTUS (Salvad.); Sharpe, Cat. B. Brit. Mus. vi. p. 63 (1881).

A male of the Wattled Brown Bulbul was obtained at Catanduanes.

PYCNONOTUS GOIAVIER (Scop.); Grant, Ibis, 1894, p. 408.

A male from Albay district.

CITTOCINCLA LUZONIENSIS (Kittl.); Grant, Ibis, 1894, p. 408.

Two males from Catanduanes.

MEGALURUS PALUSTRIS, Horsf.; Grant, Ibis, 1894, p. 510.

A male from Catanduanes.

ORTHOTOMUS DERBIANUS, Moore; Grant, Ibis, 1894, p. 408.

Obtained both in the Albay district and at Catanduanes. Mr. Whitehead procured the nest of this species in a bush (at present not identified), the large pointed leaves being sewn together in the usual Tailor-bird fashion, and forming a deep cup with a woven lining of spiders' webs and down.

PARUS ELEGANS, Less.; Grant, Ibis, 1894, pp. 408, 511.

An adult male and a bird in immature plumage were obtained in Albay district. *The immature bird* has the general colour above dark olive, darkest on the crown, a small yellowish-white patch on the middle of the nape and one on each side of the neck; the wing-coverts tipped with yellowish white. Chin, throat, and fore neck dirty yellow down the middle, shading into dark olive on the sides; the rest of the underparts yellow, but paler than in the adult.

HYLOTERPE PHILIPPINENSIS, Walden; Grant, Ibis, 1894, p. 409.

Obtained in Albay district. Being fresh moulted, the specimens before us have the upper parts richer olive inclining to brown, and the yellow of the underparts is more brilliant than in the type specimens, which are in rather worn plumage.

LANIUS LUCIONENSIS (Linn.); Grant, Ibis, 1894, p. 512.

A fine adult from Catanduanes.

CINNYRIS SPERATA (Linn.); Gadow, Cat. B. Brit. Mus. ix. p. 63 (1884).

It seems curious that two such nearly allied species as *C. whiteheadi* and *C. sperata* should both be found in Luzon, though in different parts of that large island. The present species is extremely distinct from *C. whiteheadi*, which was obtained in the northern highlands of the Benguet district, having the mantle and upper back deep maroon-red instead of black, and showing other minor differences. *C. sperata* is found at any rate as far north as the neighbourhood of Manila, and extends its range through the Philippine Islands southwards to Palawan.

CINNYRIS JUGULARIS (Linn.); Gadow, Cat. B. Brit. Mus. ix. p. 84 (1884).

From Albay district and Catanduanes. Both sexes of this species are easily distinguished from *C. obscurior* obtained in the Benguet district (see Ibis, 1894, p. 514) by their larger size, olive back, and more brightly coloured underparts. Wing 2·2–2·3 inches.

CINNYRIS EXCELLENS, Grant, Bull. B. O. C. no. xxiii. p. xviii (1895).

This beautiful new Sun-bird is most nearly allied to *C. guimarasensis*, Steere, but differs in the following points:—

Adult male. The metallic patch of feathers on the forehead is steel-green, and does not extend so far back; the rest of the crown and nape yellowish olive-green, shading into orange on the back; and the sides of the belly and flanks are olive-grey, pale yellowish in the middle, with a brilliant orange-red patch above. As in *C. guimarasensis*, the present species has the chin and upper part of the throat metallic purplish blue, and the chest and breast velvety black, divided up the middle by a brilliant orange-red band. Total length 4·0 inches, wing 1·9, tail 1·2, tarsus 0·55.

A bird which appears to be a *nearly adult female*, though the sex was not ascertained, differs from the female of *C. guimarasensis* [as described by Bourns and Worcester, Occasional Papers, Minn. Acad. Nat. Sci. i. no. 1, p. 55 (1894)] in the following points:—The head and nape are dull olive-green, shading into brighter olive-green (instead of brownish) on the rest of the upper parts; the sides of the face are dull olive (not dark ashy grey); the throat and chest grey slightly washed with yellow, rather more marked on the chin, and the rest of the underparts are pale yellowish olive, with no trace of the orange-yellow on the breast as described in the female of *C. guimarasensis*.

Rhabdornis mystacalis (Temm.); Grant, Ibis, 1894, p. 409.

Mr. Whitehead has sent me some interesting notes on this bird, which he considers ought to be placed in close proximity to the genus *Arachnothera*, the same brown style of plumage being found in the aberrant form *Arachnothera juliæ*, one of his discoveries on Mt. Kina Balu. Much of this bird's time, he says, is spent in searching among the flowers, just like an *Arachnothera*, and he also points out that the tongue is brush-tipped. He has forwarded me two examples in spirits, one of which is represented in the accompanying figure (fig. 1), and I have also shown the tongues of such birds as the Wall-Creeper (*Tichodroma muraria*), the Tree-Creepers (*Certhia* and *Salpornis*), the Australian Creepers (*Climacteris*), and the Nuthatch (*Sitta cæsia*), with which *Rhabdornis* has been associated.

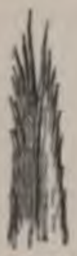

Fig. 1.

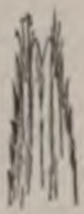

Fig. 2.

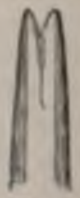

Fig. 3.

In comparing the tongues of these various forms the great differences in the structure will at once be appreciated. *Rhabdornis* has the tongue bifid at the extremity and cirrhated along the sides only, and of all the tongues which I have so far been able to examine is most like that of *Sitta cæsia* (fig. 2).

The tongue of the Wall-Creeper (fig. 3) is remarkably simple in form, being merely bilobed at the extreme tip, and devoid of all bristle-like processes; while in *Certhia stoliczkæ* (fig. 4) and *Salpornis spilonotus* (fig. 5) different modifications will be seen, the tongue in each case terminating in about five bristles. In *Climacteris leucophæa* (fig. 6), which, so far as external characters go, seems to be the most nearly allied form to *Rhabdornis*, the tongue has the extremity entire, and the upper surface as well as the sides beset with short bristles, giving it a remarkably brush-like appearance.

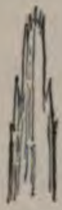
Fig. 4.

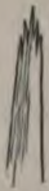
Fig. 5.

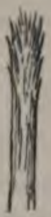
Fig. 6.

I am not at present prepared to express an opinion as to the importance of the shape of the tongue as a character in classification, though I believe from what I have already seen that some useful hints may be derived from this source, which may lead to a better arrangement of the Passeres. I intend on a future occasion to publish the results of my investigations on this subject.

ZOSTEROPS LUZONICA, Grant, Bull. B. O. C. no. xxiv. p. xxii (1895).

This new species is most closely allied to *Z. flava* (Horsf.), which is found in Sumatra, Java, and Borneo, and to *Z. nigrorum*, Tweed., from Negros. It is easily distinguished from the former by the almost uniform olive-green upper parts, only the forehead, rump, and upper tail-coverts being slightly brighter and washed with yellow; and from the latter it differs in having no black spot in front of the eye, the upper parts brighter olive, and the yellow on the throat and middle of the underparts more golden with no greenish tinge.

Adult male and female. Upper parts and sides of the head olive-green, washed with yellow on the forehead, rump, and upper tail-coverts; lores and underparts clear yellow, washed with olive on the sides and flanks. Total length 3·8 inches, wing 1·8, tail 1·4, tarsus 0·6.

I had some hesitation in adding another species to the host of *Zosterops* already described; but, there being no name for this quite distinct form, saw no alternative.

Dicæum rubriventer, Less.; Sharpe, Cat. B. Brit. Mus. x. p. 36 (1885).

Only met with in the district of Albay.

Hirundo javanica, Sparrm.; Grant, Ibis, 1894, p. 516.

A male in moult from Catanduanes.

Motacilla melanope, Pall.; Sharpe, Cat. B. Brit. Mus. x. p. 497 (1885).

An immature female from Catanduanes.

Motacilla flava, Linn.; Sharpe, Cat. B. Brit. Mus. x. p. 516, pl. vi. figs. 3–5 (1885).

A male from Catanduanes. The only previous record from the Philippines is from the island of Negros.

Emberiza spodocephala (Pall.); Sharpe, Cat. B. Brit. Mus. xii. p. 522 (1888).

An immature male was obtained on Catanduanes, and the species is now recorded for the first time from the Philippine group.

Artamus leucogaster (Wagl.); Grant, Ibis, 1894, p. 517.

From both Albay district and Catanduanes.

Sarcops calvus (Linn.); Grant, Ibis, 1894, p. 517.

Dr. Sharpe, in writing of the changes of plumage in this bird, expressed his opinion (Cat. B. Brit. Mus. xiii. p. 97) that "from the remains of grey both above and below, overspreading the black plumage, it would appear that the pure silvery-grey colour is a seasonal plumage." Having gone through the series in the British Museum, I was at first inclined to arrive at the same conclusion; but now, having received a good many additional specimens from Mr. Whitehead, and Mr. Rothschild having also kindly lent me his series for comparison, I have a much larger amount of material before me, and, as I shall presently show, Dr. Sharpe's conclusions are apparently incorrect. He did not appreciate the fact that the underparts in true *S. calvus* remain black at *all seasons*, only the flanks being grey, or he would not have united it with his *S. lowi* from Sibutu. This allied form, of which only the type is known, has the sides of the chest and the whole of the underparts grey, with only a line of blackish feathers down the middle of the belly, and appears to me to be perfectly distinct from *S. calvus*, which is found in the adjacent Tawi Tawi group and northwards throughout the Philippines. I think Dr. Sharpe was right in the first instance when he described the Sibutu bird as distinct.

I have been much puzzled over the differences in plumage in the true *Sarcops calvus* (that is, the species with the underparts *black*). I have a large series of birds before me which are now arranged geographically, and in this way only have I been able to obtain a satisfactory solution to the problem of plumage. Some specimens have the upper parts entirely silvery grey: that is to say, the neck, mantle, back, rump, and upper tail-coverts; others have the entire mantle and upper back smoky black, in strong contrast to the silvery grey of the neck and lower back, &c. In studying the series before me I have asked myself the following questions:—

Can the difference of plumage be seasonal? No, for both entirely grey and black-backed forms are to be met with at all seasons.

Can the difference in plumage be sexual? No, for I have specimens belonging to both sexes in both styles of plumage, the sex having been ascertained by reliable collectors.

Can the difference in plumage be due to age, the grey-backed forms being the adult and the brown-backed the young, as has been already suggested? No, for the brown-backed forms occur in every month of the year and have no appearance of being young birds.

Can the difference be geographical? Yes, it is. The grey-backed forms come from North Luzon, Mindoro, Marinduque, Sulu, and Bongao.

The black-backed forms come from Catanduanes, South Luzon (Albay district), Leyte, Cebu, and Negros, also Mindanao (extreme north and south) and Basilan.

Looking at these different ranges on the map, it will be seen that all the grey-backed forms on the table before me are found west of about longitude 122°, which cuts through the Islands of Marinduque and Basilan. The Marinduque bird belongs to the typical grey-backed form, while the only male we have from Basilan, though it certainly must be included in the black-backed group, has a distinct grey shade on the feathers of the mantle and upper back, which may be described as greyish black. Tweeddale, in writing on the birds of Basilan (P. Z. S. 1879, p. 72), says, "One example (♂) [which is the example just mentioned] with interscapular region brown, the others with that part hoary grey." From this it appears that both forms intergrade in this island. Again, in specimens from the island of Guimaras, which lies rather to the west of longitude 122°, I have three examples which are undoubtedly referable to the black-backed form, but one of them has distinctly a greyish tinge on the mantle. It would be interesting to see specimens from Panay, the large island touching 122° longitude, as no doubt the forms found there are mostly of an intermediate type.

Briefly summing up the above facts, we find that east of longitude 122°, or thereabout, all the Philippine examples of *S. calvus* have the mantle and upper back brownish black; while west of this line all have the upper parts uniform silvery grey; intermediate forms being met with only in localities situated along the line where the two forms intergrade.

It may be considered advisable to separate the brown-backed eastern form under a distinct name, but before doing so it would be necessary to examine a series of birds from Panay.

CALORNIS PANAYENSIS (Scop.); Sharpe, Cat. B. Brit. Mus. xiii. p. 147 (1890).

Two examples of this Glossy Starling were obtained at Albay and Catanduanes.

Munia brunneiceps, Wald.; Sharpe, Cat. B. Brit. Mus. xiii. p. 338 (1890).

Several adult examples of this southern form of *M. formosana* were obtained at both Albay and Catanduanes. This is, no doubt, the bird that Steere calls *M. atricapilla* [List Birds Mamm. Philippines, p. 23 (1890)], and records from many of the more southern islands of the group, but it has not previously been got so far north.

Uroloncha everetti (Tweed.); Sharpe, Cat. B. Brit. Mus. xiii. p. 363 (1890).

A single female specimen was shot at Catanduanes.

Caprimulgus griseatus, G. R. Gray; Hartert, Cat. B. Brit. Mus. xvi. p. 550, pl. xi. (1892).

One example of this rare Goatsucker was met with at Catanduanes.

The plate in the Catalogue referred to above is extremely badly coloured and quite misleading. In the first place, the general colour of the type (which the above figure is supposed to represent), as well as that of the three other specimens before us, is far less bright, the general tone being *grey*, while the markings vary from pale whitish buff to rufous buff, and are very different from the brilliant colouring shown in the plate, which is about as incorrect as it can be.

Merops bicolor, Bodd.; Grant, Ibis, 1894, pp. 409, 519.

A male from Catanduanes.

Alcedo ispida, Linn.; Grant, Ibis, 1894, pp. 409, 520.

An immature male from Catanduanes.

Halcyon chloris (Bodd.); Sharpe, Cat. B. Brit. Mus. xvii. p. 273, pl. vii. fig. 3 (1892).

Adult and immature birds from Albay district and Catanduanes.

Penelopides manillæ, Bodd.; Grant, Ibis, 1894, pp. 409, 520.

A young male in which the subterminal tail-bar does not extend on to the outer tail-feathers, and is but slightly developed on the penultimate pair. The casque is not yet differentiated from the line of the culmen, but otherwise the plumage resembles that of the adult.

Iyngipicus validirostris, Blyth; Grant, Ibis, 1895, p. 114.

Specimens from Albay district and Catanduanes are typical examples of this species.

Microstictus funebris, Valenc.; Grant, Ibis, 1894, p. 409, & 1895, p. 115.

Obtained at Albay and Catanduanes.

Xantholæma hæmatocephala (P. L. S. Müll.); Shelley, Cat. B. Brit. Mus. xix. p. 89 (1891).

Adult and immature specimens from Albay district.

Cacomantis merulinus (Scop.); Grant, Ibis, 1894, p. 520.

An immature bird from Albay and a male adult from Catanduanes.

Centropus viridis (Scop.); Grant, Ibis, 1894, p. 410.

Adult males from Albay and Catanduanes.

Dasylophus superciliosus (Cuv.); Grant, Ibis, 1894, p. 410.

Both sexes were collected at Albay and Catanduanes.

Lepidogrammus cumingi (Fraser); Grant, Ibis, 1894, p. 520.

Obtained in Albay district. One is a mere nestling, and has the general colour of the head, mantle, and underparts brownish black, the feathers being more or less fringed with rufous. Among the feathers of the forehead are a number of whitish bristles which look as if they had been singed at the extremity. These are, no doubt, the prototypes of the curious wax-tipped feathers of the adult. The wings and tail are much like those of the adult, being black glossed with greenish blue and the latter tipped with white. Tarsus 0·9 inch, middle toe and claw 1·2. In the adult, tarsus 1·65, middle toe and claw 1·55.

Cacatua hæmaturopygia (L. S. Müll.); Salvadori, Cat. B. Brit. Mus. xx. p. 130 (1891).

Albay district.

Prioniturus discurus (Vieill.); Salvadori, Cat. B. Brit. Mus. xx. p. 417 (1891).

Mr. Whitehead having sent a good series of adult and immature examples of this fine Racquet-tailed Parrot from Catanduanes, a few remarks on the differences in plumage between these birds and specimens from the more southern Philippine Islands are necessary. In spreading out our series geographically I find there is a considerable difference in the amount of blue on the crown. Typical specimens of *P. discurus* from North and South Mindanao, Panaon, and Basilan have the whole crown intense bright blue, forming a rather sharply defined line where it meets the yellow-green nape. On the other hand, the birds sent from Catanduanes have the blue paler and less extended, and confined to the middle of the crown, the whole forehead being green. This is the case in what appear to be three adult males, with *well-developed racquets* to the middle tail-feathers; but on examination all three are found to be moulting bright blue feathers on the middle of the crown, and from this as well as for other reasons it seems probable that the blue on the crown will eventually become more extended; for there is a male specimen collected by Dr. A. B. Meyer in Luzon, which is perfectly intermediate between the birds from Catanduanes and those from the more southern islands mentioned above; the whole crown in this specimen is washed with blue, most intense in the middle, and shading gradually into green on the forehead, sides of the head, and nape; in this last respect it differs from the southern forms, for in these the blue cap extends to the base of the culmen and is sharply defined from the yellow-green nape. It may be that at some future time someone may separate these two forms, but I shall not do so, for the evidence before me seems to show that they are merely slight insular varieties which shade gradually one into the other.

The Sulu bird (*P. suluensis,* Blasius) has been separated on account of its larger size and the blue on the crown being more extended, beginning at the anterior edge of the forehead and extending to the occiput. Its larger size (wing 6·5 inches) one can appreciate, but the supposed difference in the blue on the crown and other minor characters mentioned are equally found in birds from Basilan, Mindanao, &c., so that *P. suluensis* can only be considered a rather larger insular race of *P. discurus,* which it absolutely resembles in plumage.

Loriculus philippensis (P. L. S. Müll.); Grant, Ibis, 1894, pp. 410, 521.

From Catanduanes.

Osmotreron axillaris (G. R. Gray); Salvadori, Cat. B. Brit. Mus. xxi. p. 48 (1893).

An example from Catanduanes.

Phabotreron leucotis (Temm.); Grant, Ibis, 1894, pp. 410, 521.

Obtained at Catanduanes.

Ptilopus leclancheri (Bonap.); Salvadori, Cat. B. Brit. Mus. xxi. p. 79 (1893).

A male in poor condition from Catanduanes.

Carpophaga chalybura, Bonap.; Grant, Ibis, 1894, p. 521.

Additional examples from Albay district and Catanduanes all bear out the characters mentioned in the above reference to this Fruit-Pigeon, the dark purplish-grey band across the nape being well-marked in all. I think this form may be fairly retained under Bonaparte's name and kept separate from typical *C. ænea.*

Carpophaga poliocephala (G. R. Gray); Salvadori, Cat. B. Brit. Mus. xxi. p. 209 (1893).

Several examples of this magnificent and very rare Green Fruit-Pigeon were collected in the Albay district. It has previously been obtained only in the more southern islands, and was not met with at Catanduanes.

Macropygia tenuirostris, G. R. Gray; Grant, Ibis, 1894, p. 521 (1893).

A male adult from Albay district.

Turtur dussumieri (Temm.); Grant, Ibis, 1895, p. 117.

Several specimens from Albay and Catanduanes.

Chalcophaps indica (Linn.); Salvadori, Cat. B. Brit. Mus. xxi. p. 514 (1893).

An immature bird from Albay district.

Excalfactoria lineata (Scop.); Grant, Cat. B. Brit. Mus. xxii. p. 253 (1893).

Adult males and females purchased from a native collector and said to be obtained in the neighbourhood of Manila.

Turnix fasciata (Temm.); Grant, Cat. B. Brit. Mus. xxii. p. 535 (1893).

Two somewhat immature females, also from the neighbourhood of Manila.

Turnix ocellata (Scop.); Grant, Cat. B. Brit. Mus. xxii. p. 548 (1893).

A pair of very fine females obtained from the same collector. These are the most adult examples I have seen, the whole chin and throat being *entirely* black.

Hypotænidia torquata (Linn.); Sharpe, Cat. B. Brit. Mus. xxiii. p. 43 (1894).

An adult pair from Albay and Catanduanes.

Gallicrex cinerea (Gmel.); Sharpe, Cat. B. Brit. Mus. xxiii. p. 183 (1894).

A male and female adult from Catanduanes in the brownish-buff plumage of autumn and winter. Neither Dr. Sharpe in the above work, nor *any other* author, so far as I am aware, make the slightest reference to the autumn change of plumage which is so marked in the male, only the breeding-dress being described, in which the whole of the hind neck and underparts, as well as the general colour of the upper parts, are black. In the *fully adult male* before me the whole of the underparts from the throat downwards are pale buff with rather fine, somewhat wavy, brownish-black bars, except on the middle of the belly, which is paler and nearly devoid of markings; the under tail-coverts have the ground-colour more rufous buff; the rest of the plumage also resembles that of the *female*. The latter does not appear to have any different breeding-plumage, or, if she changes, the feathers are very similar to those of the autumn dress.

Charadrius fulvus, Gmel.; Seebohm, Geogr. Distr. Charadr. p. 99 (1888).

Two adult birds from Albay district shot on 3rd September still retain part of the black breeding-plumage on the under surface of the body.

Ægialitis dubius (Scop.).

Charadrius minor, Wolf & Meyer; Seebohm, Geogr. Distr. Charadr. p. 130 (1888).

From Catanduanes.

Tringoides hypoleucus (Linn.).

Totanus hypoleucus (Linn.); Seebohm, Geogr. Distr. Charadr. p. 371 (1888).

An adult female from Albay district.

Rhynchæa bengalensis (Linn.).

Rhynchæa capensis, Seebohm, Geogr. Distr. Charadr. p. 456 (1888).

Adult males from Catanduanes.

Nycticorax manillensis, Vigors; Grant, Ibis, 1895, p. 117.

Five adult male specimens in moult from Albay and Catanduanes.

Ardetta cinnamomea (Gmel.); Grant, Ibis, 1894, p. 522.

Male from Catanduanes.

Phoyx manillensis (Meyen); Sharpe, Bull. B. O. C. vol. iii. p. xxxviii (1894).

A fine adult male from Albay district, bearing out the characters of the species.

Bubulcus coromandus (Bodd.); Tweed. Trans. Zool. Soc. ix. p. 237 (1875); Steere, List Birds & Mamm. Philippines, p. 26 (1890).

An adult male from Catanduanes.

Butorides javanica (Horsf.); Grant, Ibis, 1894, p. 522.

Immature male from Albay district.

Melanopelargus episcopus (Bodd.); Tweed. Orn. Works, pp. 200, 600, 645, 660 (1881); Steere, List Birds & Mamm. Philippines, p. 27 (1890).

A male from Albay district.

Anas luzonica, Fraser; Grant, Ibis, 1895, p. 117.

A male from Catanduanes.

Dendrocygna arcuata, Cuv.

Dendrocygna vagans, Steere, List Birds & Mamm. Philippines, p. 27 (1890).

An adult pair from Catanduanes.

XXII.—*Bulletin of the British Ornithologists' Club.*

Nos. XXII.–XXIV.

No. XXII. (Dec. 29th, 1894.)

The twenty-first meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 19th of December, 1894.

Chairman: P. L. Sclater, F.R.S.

Members present:—G. Barrett-Hamilton, E. Bidwell, J. L. Bonhote, W. E. De Winton, A. H. Evans, John Gerrard, W. Graham, G. H. Caton Haigh, E. Hartert, J. E. Harting, W. H. Hudson, E. G. B. Meade-Waldo, F. Menteith Ogilvie, C. E. Pearson, H. J. Pearson, Howard Saunders (*Treasurer*), R. Bowdler Sharpe (*Editor*), A. B. R. Trevor-Battye, C. A. Wright, John Young.

Visitors: Graham Kerr, D. F. Mackenzie, Arnold Pike, T. M. Pike, Hugh L. Popham, H. Stevens, Capt. Cayley Webster.

Dr. R. **Bowdler Sharpe** exhibited a specimen of a bird new to the Fauna of Great Britain. This was an example of the Sub-alpine Warbler (*Sylvia subalpina*), which had been forwarded to him for exhibition by Mr. J. S. Elliott, of Dudley, who had shot it himself on the island of St. Kilda on the 13th of June, 1894, after a heavy gale from the south-west.

Mr. J. E. **Harting** exhibited a specimen of the Yellow-browed Warbler (*Phylloscopus superciliosus*), shot near Beverley by Mr. Swailes of that place.

Mr. W. E. **De Winton** exhibited a pair of Kestrels which he had shot last summer in the act of capturing young Pheasants. He regarded this as an isolated instance, as, after the shooting of the pair in question, no more young birds were taken, although Kestrels were numerous in the neighbourhood.

Mr. A. **Trevor-Battye** made some remarks on the natural history of Kolguev Island.

The Hon. **Walter Rothschild** communicated the following description of a new genus and species of bird from New Zealand, which he proposed to call

"**Traversia**, gen. nov. Xenicidarum.

"Differs in several important points both from *Xenicus* and *Acanthidositta*. Bill much larger and stouter, very little shorter, if at all, than the tarsus; the latter about as long as middle toe without claw, or the hind toe and claw, while in *Xenicus* and *Acanthidositta* it is about twice as long as the hind toe. The principal difference, however, is the weak character of the wing, which points to flightlessness, as does also the very soft and loose character of the entire plumage, and the very Ralline aspect of the bird. There are only 10 tail-feathers, and the scutellation of the tarsus is like that of *Xenicus*. These two points determine its position in the *Xenicidæ* at once (*cf.* Sclater, Cat. B. xiv. p. 450). The type is

"TRAVERSIA LYALLI, sp. nov.

"*Male.* Above dark brownish olive-yellow, each feather with a brownish-black border. A narrow distinct yellow superciliary line. Wings and tail umber-brown, the inner webs darker; wing-coverts like back. Chin, throat, and breast chrome-yellow, each feather slightly edged with greyish brown. Flanks, abdomen, and vent pale brown, centre of feathers paler.

"*Female.* Upper surface umber-brown, each feather bordered with very dark brown; wings and tail similar. Under surface buffy grey, the feathers edged with pale brown.

"Total length about 4 inches, culmen 0·6, wing 1·8 to 1·9, tail 0·8, but much concealed; tarsus 0·75, middle toe 0·65, hind toe without claw 0·5.

"*Habitat.* Stephens Island, New Zealand. Discovered by Mr. D. Lyall, lighthouse-keeper, and sent to me by Mr. Henry H. Travers."

Mr. ROTHSCHILD also sent for exhibition one of the two typical specimens of *Craspedophora mantoui*, Oust. He wished to call attention to the fact that it agrees in the minutest details with Mr. J. Büttikofer's recently described *C. bruyni*, and that there could be no doubt of the two species being identical. *C. mantoui* was admirably figured by Keulemans in the 'Nouvelles Archives du Muséum d'Histoire Naturelle,' Paris (vol. iv. pl. 15).

Dr. A. B. MEYER sent a diagnosis, accompanied by a coloured sketch, of a remarkable new genus and species of Bird of Paradise, which would be described later on by him in detail and figured elsewhere:—

PTERIDOPHORA, gen. nov. Paradiseidarum.
(πτερίς=filix, φέρειν=ferre.)

Capite utrinque scapo paradoxo, valde elongato, filicis flabelli uniseriati instar transformato, lobis plurimis, corio similibus, munito. Rostro turdino, recto, angusto: alis brevibus, remige primo dimidiam partem secundi superante, tertio, quarto, quinto, sexto longioribus, quarto longissimo: cauda mediocri, æquali: pedibus mediocribus. Statura minore quam in genere *Lophorhina*.

PTERIDOPHORA ALBERTI, sp. n.

Mas. Supra velutino-nigra, plus minusve olivaceo-nitens, plumis sincipitis elongatis, utrinque productis: capite lateribus supra oculos scapo, corpore fere duplo longiore, lobis 37–38 ornato, supra colore floris myosotidis, subtus fuscescentibus, singulis in margine postico tenuiter nigro-ciliatis: uropygio nigro-cinereo: alis caudaque nigris, remigibus rectricibusque basin versus pallide ferrugineis: gula velutino-nigro guttulata: subtus ochraceo-flava: rostro nigro: pedibus fuscis. Long. tot. c. 220 millim., al. 123, caud. 90, rostri culm. 22, tarsi 30, capitis scapi 350, lobi max. long. 9, lat. 7.

Hab. Nova Guinea, in montibus ad flumen 'Amberno.'

Dr. BOWDLER SHARPE made some remarks upon this extraordinary species, which constituted the fourth new form of Paradise-bird described within the last month; the three others being *Parotia carolæ* of Meyer [*anteà*, p. 145], *Craspedophora bruijni*, sp. n., and *Ianthothorax benzbachi*, gen. et sp. n., described by Dr. Büttikofer (Notes Leyden Mus., Dec. 1894).

Dr. Sharpe gave the following list of the genera and species of the *Paradiseidæ* and *Ptilonorhynchidæ* known up to the present day:—

1. *Ptilorhis paradisea*, Swains. S. & C. Australia.
2. —— *victoriæ*, Gould. N.E. Australia.
3. *Craspedophora magnifica* (V.). N.W. New Guinea.
4. —— *intercedens*, Sharpe. S.E. New Guinea.
5. —— *mantoui*, Oust. (*C. bruijni*, Büttik.). N.W. New Guinea.
6. *Ianthothorax benzbachi*, Büttik. N.W. Guinea.
7. *Paryphephorus duivenbodii* (Meyer). N.W. New Guinea.
8. *Seleucides nigricans* (Shaw). New Guinea.
9. *Drepanornis albertisi*, Scl. N.W. New Guinea.
10. —— *cervinicauda*, Scl. S.E. New Guinea.
11. —— *geisleri*, Meyer. E. New Guinea.
12. *Drepananax bruijni* (Oust.). N. New Guinea.
13. *Epimachus speciosus* (Bodd.). N.W. New Guinea.
14. —— *ellioti*, Ward. Hab. ign.
15. —— *meyeri*, Finsch. S.E. New Guinea.

16. *Astrapia nigra* (Gm.). N.W. New Guinea.
17. *Astrarchia stephaniæ*, Finsch. S.E. New Guinea.
18. *Paradigalla carunculata*, Less. N.W. New Guinea.
19. *Trichoparadisea gulielmi* (Cab.). E. New Guinea.
20. *Paradisornis rudolphi*, Finsch & Meyer. S.E. New Guinea.
21. *Paradisea apoda*, L. Aru Islands.
22. —— *novæ-guineæ*, D'Albert. & Salvad. S. New Guinea.
23. —— *finschi*, Meyer. E. New Guinea.
24. —— *augustæ-victoriæ*, Cab. E. New Guinea.
25. —— *mariæ*, Reichen. E. New Guinea.
26. —— *minor*, Shaw. N.W. New Guinea, Mysol.
27. —— *raggiana*, Scl. S.E. New Guinea.
28. —— *decora*, Salv. & Godm. D'Entrecasteaux Isl.
29. *Uranornis rubra* (Lacép.). Waigiou, Batanta.
30. *Cicinnurus regius* (L.). New Guinea, Aru Isl.
31. *Rhipidornis gulielmi-tertii* (Musschenbr.). N.W. New Guinea.
32. *Diphyllodes seleucides*, Less. N.W. New Guinea.
33. —— *magnifica* (Penn.). N.W. New Guinea.
34. —— *chrysoptera*, Gould. Jobi Isl.
35. —— *hunsteini*, Meyer (*D. septentrionalis*, Meyer). S.E. New Guinea.
36. *Schlegelia respublica* (Bp.). Waigiou, Batanta.
37. *Parotia sexpennis* (Bodd.). N.W. New Guinea.
38. —— *lawesi*, Ramsay. S.E. New Guinea.
39. —— *carolæ*, Meyer. N.W. New Guinea.
40. *Semioptera wallacii* (Gray). Batchian.
41. —— *halmaheræ*, Salvad. Halmahéra.
42. *Lophorhina superba* (Penn.). N.W. New Guinea.
43. —— *minor*, Ramsay. S.E. New Guinea.
44. *Lamprothorax wilhelminæ*, Meyer. N.W. New Guinea.
45. *Phonygama keraudreni* (Less. & Garn.). N.W. & S.E. New Guinea, Aru Isl.
46. —— *gouldi* (Gray). N.E. Australia.
47. —— *hunsteini*, Sharpe (*P. thomsoni*, Tristr.). Normanby Isl., Goodenough Isl.
48. —— *purpureo-violacea*, Meyer. S.E. New Guinea.

49. *Manucodia chalybeata* (Penn.). New Guinea, Mysol.
50. —— *jobiensis*, Salvad. Jobi Isl.
51. —— *rubiensis*, Meyer. N.W. New Guinea.
52. —— *atra* (Less.). New Guinea, Mysol, Waigiou, Batanta.
53. *Eucorax comrii* (Scl.). D'Entrecasteaux Isl.
54. *Lycocorax pyrrhopterus* (Forst.). Halmahéra.
55. —— *obiensis*, Bernst. Obi Isl.
56. —— *morotensis*, Bernst. Morotai Isl.
57. *Xanthomelus aureus* (L.). N.W. New Guinea.
58. —— *ardens*, D'Albert. & Salvad. S. New Guinea.
59. *Prionodura newtoniana*, De Vis. Queensland.
60. *Cnemophilus macgregorii*, De Vis. S.E. New Guinea.
61. —— *mariæ*, De Vis. S.E. New Guinea.
62. *Loria loriæ*, Salvad. S.E. New Guinea.
63. *Amblyornis inornata* (Schl.). N.W. New Guinea.
64. *Xanthochlamys subalaris* (Sharpe). S.E. New Guinea.
65. —— *musgravianus* (Goodw.). S.E. New Guinea.
66. *Sericulus melinus* (Lath.). E. Australia.
67. *Ptilonorhynchus violaceus* (V.). E. Australia.
68. *Scænopœetes dentirostris* (Ramsay). Queensland.
69. *Ælurœdus melanotis* (Gray). Aru Isl.
70. —— *arfakianus*, Meyer. N.W. New Guinea.
71. —— *melanocephalus*, Ramsay. S.E. New Guinea.
72. —— *maculosus*, Ramsay. Queensland.
73. —— *buccoides* (Temm.). New Guinea, Waigiou, Batanta.
74. —— *stonii*, Sharpe. S.E. New Guinea.
75. —— *geislerorum*, Meyer. E. New Guinea.
76. —— *viridis* (Lath.). Australia.
77. *Chlamydodera maculata* (Gould). E. & S. Australia.
78. —— *occipitalis*, Gould.
79. —— *guttata*, Gould. Int. Australia.
80. —— *nuchalis* (J. & S.). N. Australia.
81. —— *orientalis*, Gould. Queensland.
82. —— *cerviniventris*. N.E. Australia, S.E. New Guinea.

Two new genera were proposed in the above list of *Paradiseidæ*, and one in the *Ptilonorhynchidæ*, for which the following characters were given :—

Drepananax, gen. n.

Genus simile '*Drepanornis*' dicto, sed chlamyde laterali præpectorali diversâ et fasciis pectoralibus absentibus distinguendum.

Typus: *D. bruijni* (Oust.).

Eucorax, gen. n.

Genus simile generi '*Manucodia*' dicto, sed pilei plumis lateralibus recurvatis et rectricibus medianis recurvati distinguendum.

Typus: *E. comrii* (Sclater).

Xanthochlamys, gen. n.

Genus simile generi '*Amblyornis*' dicto, sed cristâ maximâ ornatâ distinguendum.

Typus: *X. subalaris* (Sharpe).

Mr. Osbert Salvin, F.R.S., sent some photographs of a specimen of an Albatros in the Peterhead Museum, which had been forwarded to him by Mr. J. A. Harvie-Brown. Mr. Salvin identified the species as *Diomedea melanophrys*.

Mr. P. L. Sclater, F.R.S., exhibited a skin of *Falco punicus*, which had been captured at sea in the Mediterranean, south of Crete, in June last, by Mr. Arthur Sclater, on his passage home from Ceylon, and brought alive to England.

Mr. Sclater called attention to the recently published work on the birds of the Balkan States, Bulgaria, Eastern Roumelia, and the Dobrudscha ('Materialen zu einer Ornis Balkanica'), by Othmar Reiser, Custos of the Landes-Museum in Sarajevo, which contained a mass of information on the ornithology of one of the least-known portions of Europe, and would be of special interest to students of the Palæarctic Ornis. Mr. Sclater had just received a letter from the author, who stated that he had found the Snow-Finch (*Montifringilla nivalis*) nesting on some of the highest mountains in Greece (Riona, 2500 metres, and the Korax).

No. XXIII. (Jan. 29th, 1895.)

The twenty-second meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 16th of January, 1895.

Chairman: P. L. Sclater, F.R.S.

Members present:—E. Bidwell, W. E. De Winton, E. Hargitt, St. George Mivart, F.R.S., E. G. B. Meade-Waldo, F. Menteith Ogilvie, C. E. Pearson, H. J. Pearson, F. Penrose, T. Digby Pigott, C.B., Howard Saunders (*Treasurer*), R. Bowdler Sharpe (*Editor*), H. Seebohm, H. H. Slater, W. B. Tegetmeier, C. A. Wright.

Visitors: Col. Adamson, J. B. Bilderdeck, C. Poole, C. B. Rickett, F. C. Selous.

Dr. A. B. Meyer sent the following description of the hitherto unknown male of *Amblyornis inornata* (Schl.), from Karoon, west of the Arfak Mountains:—

"*Mas*. Supra colore brunneo saturatiore quam femina subterque ferrugineo tinctus, subalaribus ferrugineis: alis caudaque subter suspectu quodam flavo-olivaceis: scapis flavescentibus: capitis crista sincipiti tantummodo inserta, transversa, flabelliformi, longissima, 80 millim.: colore quo *Amblyornis subalaris*, Sharpe, sed plumis lateralibus marginibus brunneis nec nigris. Long. al. 134 millim., rostri culm. 25, caud. 98.

"Dr. Sharpe recently established [*vide anteà* p. 273] the genus *Xanthochlamys* for the two known crested species of *Amblyornis*, assuming that the male of *A. inornata* (Schl.) was without a crest, as, indeed, has been generally believed to be the case, though Dr. Sharpe himself once rightly doubted this fact. The specimen before me, having just reached the Dresden Museum, leaves no doubt that it really is the male of *A. inornata*, of which it has happened that only young males or adult ones not in nuptial dress and females have been known since the year 1871, when it was first described, a fate which it shared to a certain degree with *Drepananax bruijni* (Oust.). The genus *Xanthochlamys*, therefore, must again give way to *Amblyornis*."

Dr. Sharpe regretted that he had instituted a new generic term for the Crested Gardener-Birds of South-eastern New Guinea, but pleaded that the number of specimens of *Amblyornis inornata* which had been received by European Museums during the last twenty-three years—none of which had shown the least trace of a crest—had warranted him in believing that his genus *Xanthochlamys* was well founded.

Mr. W. R. Ogilvie-Grant communicated a description of two new species of birds from the Philippine Islands, which he proposed to characterize as follows:—

CALLAEOPS, gen. n.

Genus simile generi '*Arses*' dicto, carunculam ophthalmicam exhibens, sed cristâ longâ lanceolatâ, caudâ cuneatâ et pedibus debilibus distinguendum.

Typus est

CALLAEOPS PERIOPHTHALMICA, sp. n.

Omnino nigra: pectore mediano abdomineque albis: subcaudalibus et axillaribus albo marginatis. Long. tot. 8·5 poll., alæ 3·5, caudæ 4·5, tarsi 0·6.

Hab. in insulâ Philippinensi 'Luzon' dictâ.

CINNYRIS EXCELLENS, sp. n.

Similis *C guimarasensi*, Steere, sed fronte tantum chalybeo-viridi, vertice nuchâque olivaceis, dorso aurantiaco, hypochondriis olivaceo-griseis: plagâ pectorali medianâ scarlatinâ distinguenda. Long. tot. 4·0 poll., alæ 1·9, caudæ 1·2, tarsi 0 55.

Hab. in parte meridionali insulæ Philippinensis 'Luzon' dictæ.

Mr. Henry Seebohm called attention to the existence of two races of the Ground-Thrush, which had hitherto been united under the name of *Geocichla sibirica*. The two forms were easily distinguishable, and should be called *Geocichla sibirica* (Pall.) and *G. davisoni* (Hume).

Mr. W. B. Tegetmeier exhibited the skin of a *Phasianus torquatus* from Samoa.

Dr. **Bowdler Sharpe** made some remarks on Canon Tristram's paper "On the Use and Abuse of Generic Terms" ('Ibis,' 1895, pp. 130–133). A discussion followed, in which Mr. P. L. Sclater, Dr. St. George Mivart, Mr. Howard Saunders, Mr. Henry Seebohm, and Mr. H. J. Pearson took part.

Mr. **Howard Saunders** proposed for the smaller Noddy Terns the new generic term of

MICRANOUS, gen. n.

Genus simile generi '*Anous*' dicto, sed rostro longiore et tenuiore, et rectrice tertiâ externâ utrinque longissimâ distinguendum.

Typus est *Micranous tenuirostris* (Temm.).

Mr. **Sclater** exhibited a pair of skins of Darwin's Tinamou (*Nothura darwini*) from Patagonia (*cf.* Arg. Orn. ii. p. 213, pl. xx.), recently received from Prof. Dr. Carlos Berg, Director of the National Museum of Buenos Ayres, and pointed out the discrepancy of the size of the sexes in this as in other Tinamous, the male being considerably smaller than the female.

No. XXIV. (March 2nd, 1895.)

The twenty-third meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 20th of February, 1895.

Chairman : **St. George Mivart**, F.R.S.

Members present :—E. Bidwell, W. E. De Winton, W. Graham, Edward Hargitt, Ernst Hartert, W. Ogilvie-Grant, T. Parkin, C. E. Pearson, H. J. Pearson, Howard Saunders (*Treasurer*), R. Bowdler Sharpe (*Editor*), Johnson Wilkinson, John Young.

Visitors : J. H. Bidwell, C. B. Rickett, F. C. Selous, H. Stevens.

Dr. A. B. Meyer sent for exhibition plates of the remarkable Birds of Paradise, *Pteridophora alberti* and *Parotia carolæ,* recently described by him.

The Hon. Walter Rothschild sent for exhibition the second specimen known of *Pteridophora alberti,* in order that the members of the Club might have an opportunity of examining this singular bird.

Mr. Rothschild likewise sent a fine collection of Birds of Paradise of different genera:—including an adult male of *Astrarchia stephaniæ*; a perfect skin of *Rhipidornis guilielmi-tertii*; the three species of *Parotia,* viz. *P. sexpennis, P. lawesi,* and *P. carolæ*; a specimen of *Amblyornis inornata* with a yellow crest; and a fine series of *Drepanornis bruijni,* showing every stage of plumage of the male, from his first dress—when he resembles the female—up to the complete and decorated plumage of the adult.

Mr. Hartert, who exhibited these specimens on behalf of Mr. Rothschild, made some remarks on the series.

A special vote of thanks to Mr. Rothschild was passed.

Mr. Ogilvie-Grant exhibited a nest containing six eggs, believed to be those of the Blackcap (*Sylvia atricapilla*), which had been taken by Dr. John A. Norton in Somersetshire on the 15th May, 1894, and were lent for exhibition. The eggs were of a very peculiar type, the ground-colour being pure white; towards the larger end especially, they were spotted and blotched with reddish, and there were also present some underlying clouds of pale lilac. The eggs were, in fact, very similar to some of the clutches in the National Collection laid by the Nuthatch (*Sitta cæsia*), but Dr. Norton, who *saw the old bird*, felt perfectly certain that if it was not a Blackcap, which he believed it to be, it could only be a Garden-Warbler (*Sylvia hortensis*).

Mr. Ogilvie-Grant also exhibited the male and female of a new species of *Zosterops* collected by Mr. J. Whitehead in South Luzon, described as

Zosterops luzonica, sp. n.

Most nearly allied to *Z. nigrorum*, from Negros, but distinguished by having no black spot in front of the eye, the upper parts brighter olive, and the yellow on the throat and middle of the underparts more golden with no greenish tinge. Total length 3·8 inches, wing 1·8, tail 1·4, tarsus 0·6.

Mr. Ogilvie-Grant then exhibited the skulls of two Wood-Partridges, *Arboricola javanica* and *Tropicoperdix charltoni*; pointing out the extremely peculiar supra-orbital chain of bones characteristic of the former species and other members of the genus, but entirely absent in the latter, as well as in the allied form *T. chloropus*. Mr. W. T. Blanford had called his attention to a MS. note on a specimen of *T. chloropus* in the British Museum, from which it was clear that this latter peculiarity had long ago been observed by Mr. J. Wood-Mason, who first pointed out the supra-orbital chain of bones in *Arboricola*; but the statement respecting the absence of this chain of bones in *Tropicoperdix* was never published, and was quite lost sight of.

Under these circumstances it was thought necessary to separate *T. charltoni* and *T. chloropus* from the genus *Arboricola* (in which they had generally been included), and to place them in the genus *Tropicoperdix*, already proposed by Blyth; the differences in the skull being supplemented by certain external characters, such as the different style of plumage and the peculiar *snow-white* downy patches situated on each side of the body under the wing.

Dr. Bowdler Sharpe remarked that in the 'Sarawak Gazette' of last January, Mr. E. Bartlett, the Curator of the Museum at Sarawak, had recorded the occurrence, for the first time in Borneo, of the Shoveler Duck (*Spatula clypeata*) and of the Sand-Martin (*Cotile riparia*). Dr. Sharpe stated that he should have expected the latter bird to have been the Chinese species, *Cotile sinensis*.

Mr. W. E. De Winton exhibited some interesting specimens of Willow-Grouse and Ptarmigan, selected from a large collection of these birds sent from St. Petersburg.

Mr. T. Parkin exhibited a skin of a very rare species of Petrel, identified by Mr. Osbert Salvin as *Œstrelata incerta* of Schlegel. Mr. Parkin shot the bird during a calm, on his recent voyage to the South Atlantic, in lat. 39° 51′ S., long. 8° 49′ E.

XXIII.—*Notices of recent Ornithological Publications.*

[Continued from p. 164.]

38. *Annals of Scottish Natural History.* Nos. 11 & 12. 1894.

We have already noticed Mr. W. Ogilvie-Grant's paper on the plumage of the Red Grouse, but in No. 11 of our contemporary there are some other interesting papers which deserve mention. One of these relates to the birds of the Island of Barra, in the Outer Hebrides, by Mr. John MacRury, whom we thank for a separate copy of the entire treatise, concluded in No. 12. Mr. Lionel Hinxman's valuable report on the movements and occurrences of birds in Scotland during 1893 also runs through the two numbers. In No. 12 Mr. W. Eagle Clarke shows the strong probability of the Hawfinch having actually bred in Berwickshire; it is well known that the species has been gradually spreading northwards for years past. Mr. W. Berry gives an account of the successful introduction of the Red Grouse on Tentsmuir, a barren tract of low-lying moorland on the edge of the sea, and nearly as flat. Among the miscellaneous ornithological notes the most important is, perhaps, Dr. Charles Stuart's record of the nesting of the Great Spotted Woodpecker in Berwickshire.

39. *Chapman (F. M.) on the Birds of New York.*

[Visitors' Guide to the Local Collection of Birds in the American Museum of Natural History, New York City. With an Annotated List of the Birds known to occur within fifty miles of New York City. By Frank M. Chapman. 8vo. New York, 1894.]

The American Museum of Natural History in Central Park, New York City, contains a separate collection of local birds: that is, of birds which occur, more or less frequently, within fifty miles of the city. This series has been formed to aid students in the identification of the native birds, and the present 'Guide' has been written to illustrate it. After a preliminary discussion of the avifauna as a whole, in the course of which the 348 species attributed to it are divided into eight categories, according to their modes of occurrence, the New York birds are enumerated in systematic order, following the nomenclature and arrangement of the 'Check-list,' and notes are given as to their distribution and when and where they are found in the district referred to.

40. *De Vis on Birds from Mount Maneao, New Guinea.*

[Report on Ornithological Specimens collected in New Guinea. By C. W. De Vis, M.A., Curator, Queensland Museum. 8 pp. Brisbane, 1894.]

Mr. De Vis reports on a collection of 210 birds, referable to 80 species, made for Sir William Macgregor by Capt. Armit and Mr. Guise during his recent exploration of Mount Maneao in British New Guinea. The following species are described as new:—*Alcyone læta*, *Rhipidura manyeocensis*, *Monachella viridis*, *Pœcilodryas armiti*, *P. modesta*, *Micrœca griseiceps*, *M. punctata*, *Acanthiza papuensis*, *Symmorphus nigripectus*, *Eulacestoma* (gen. nov. ex fam. Laniidarum) *nigripectus*, *Sittella griseiceps*, *Melirrhopetes ornatus*, *M. collaris*, *Ptilotis* (*Ptiloprora*, subg. nov.) *guisei*, *Drymædus brevicauda*, *Anthus gutturalis*, *Cnemophilus mariæ*, and *Ptilopus bellus orientalis*. Amongst these the most remarkable forms are the *Acanthiza* (an Australian genus, now first recognized in New Guinea) and the *Cnemophilus*, a second species of this new genus of Paradiseidæ (see Ibis, 1891, p. 414, pl. x.).

Besides the birds from Mount Maneao, Mr. De Vis gives a supplementary list of species met with by Sir W. Macgregor at Cloudy Bay, Goodenough Island, and the Kumusi River. On Goodenough Island a new Thrush was discovered (*Merula canescens*), and at the Kumusi River a new Paradise-bird (*Paradisea intermedia*), halfway between *P. raggiana* and *P. augustæ-victoriæ.*

41. *Foster on Ornithological Literature,* 1876–83.

[A Consideration of some Ornithological Literature, with Extracts from current criticism: 1876–83. By L. S. Foster. Abstr. Proc. Linn. Soc. New York, 1893–94, No. 6, p. 47.]

This is an abstract of a paper read before the Linnean Society of New York in October 1893. The list of memoirs and the short criticisms annexed are taken from the reviews published in the 'Bulletin' of the Nuttall Ornithological Club from 1876 to 1883, and are held to "represent pretty fairly the ornithological literature of this important period, particularly so far as North America is concerned."

42. *Godman and Salvin's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana: or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman and Osbert Salvin. (Zoology.) Parts CXVIII., CXIX. 4to. London: 1894. Published for the Editors by R. H. Porter, 18 Princes Street, Cavendish Square, W.]

Two parts of 'Biologia Centrali-Americana' issued in October and November last year carry the account of the birds nearly to the end of the Caprimulgidæ. In the latter part the following plates are given:—

Aves, tab. 58. *Antrostomus*[*] *saturatus.*
,, 58a. *Caprimulgus yucatanicus.*
,, 58b. —— *salvini.*

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[*] *Caprimulgus saturatus* in the text, p. 388.

43. *Goeldi on the Birds of Brazil.*

[Monographias Brasileiras.—II. As Aves do Brasil, por Emilio Augusto Goeldi, Dr. Ph., Director do Museu Paraense. Primeira Parte. 12mo. Rio de Janeiro, 1894.]

Dr. Goeldi's energy has already produced the first part of a handbook of the birds of Brazil, which we trust will have the effect of waking up some of the more enlightened inhabitants of that sleepy and much neglected country to take a little interest in its avifauna. After a preliminary dissertation, in the course of which the ornis of Brazil is estimated to contain about 1610 species, the author gives a popular account of the Raptores, Psittaci, Picariæ, and first families of the Passeres, of that vast and varied land, not omitting to introduce field-notes on such of them as he is acquainted with by personal observation. Dr. Goeldi has evidently an excellent general knowledge of American birds, although we cannot quite agree to some points in his arrangement and nomenclature.

44. *Lilford's 'Coloured Figures of British Birds.'*

[Coloured Figures of the Birds of the British Islands. Issued by Lord Lilford, F.Z.S. &c., President of the British Ornithologists' Union. Part XXII., December 1892; XXIII., March 1893; XXIV., June 1893; XXV., October 1893; XXVI., November 1893; XXVII., December 1893; XXVIII., September 1894; XXIX., November 1894. Royal 8vo. London.]

Since this important work was last noticed (Ibis, 1893, p. 268) eight more parts have made their appearance, and carry it on to the 29th part. Each of these contains 10 or 11 beautiful coloured figures of our native birds from drawings by Thorburn, Keulemans, and other excellent artists, such as have never been surpassed, and hardly, if ever, equalled for accuracy and artistic treatment. We are pleased to observe that in the recent numbers the letterpress, with its interesting notes, has assumed a greater development.

We are told that about four or five parts more will complete the work, which, when ultimately arranged and bound, will make 10 or 12 volumes.

45. *Lucas on the Affinities of the* Cœrebidæ.

[Notes on the Anatomy and Affinities of the *Cœrebidæ* and other American Birds. By Frederic A. Lucas. Proc. U.S. Nat. Mus. xvii. p. 299.]

Mr. Lucas has made a careful examination of various points in the structure of some of the Cœrebidæ and allied forms of Oscinine Passeres, but has not arrived at very satisfactory results. The study of a considerable number of specimens has lessened his hopes that anatomical and osteological characters may be relied upon to show relationship among the Passeres; we have, however, some positive statements. In the characters of their palate the Cœrebidæ differ from the Mniotiltidæ and resemble in some points the Drepanididæ and some of the Tanagridæ. In their tongue the Cœrebidæ differ entirely from the Tanagridæ, and find their nearest analogue in the Australian *Acanthorhynchi*. *Certhodea*, of the Galapagos, belongs to the Mniotiltidæ. *Myiadectes* is allied to the Thrushes rather than to *Ampelis*, and *Phæornis* is still more certainly a member of the Turdine group, whereas *Phainopepla* is undoubtedly closely affine to *Ampelis*.

46. *Madarász on the Nesting of the Nutcracker in Hungary.*

[Die Nester des Nusshähers (*Nucifraga caryocatactes*). 'Aquila,' 1894, p. 48.]

Dr. Madarász gives an account of the nesting of the Nutcracker in Hungary in 1894. Five nests were obtained, of which three have gone to the National Museum at Buda-Pesth. In the case of one of these, procured by our friend Mr. C. G. Danford on the Curu Galles, both the parent birds were likewise obtained. A nest which contained young birds was half-domed over, like that of a Magpie. Dr. Madarász thinks that this addition to the nest is made after the young birds are hatched.

47. *Martorelli on Italian Birds of Prey.*

[Monografia Illustrata degli Uccelli di Rapina in Italia. Del Dott. Giacinto Martorelli. Mem. Soc. Italiana Sc. Nat. Milano, v. pp. 215, 1895.]

In this handsome treatise Dr. Martorelli enumerates all the species of "Raptores" ascribed to the Italian Kingdom, commencing with the Vultures and winding up with the Owls. If the latter were to be included, we are rather surprised to see them placed so far apart from the Harriers, which follow the Vultures. Woodcuts of considerable merit are given in all cases where representations of the heads, talons, or wings are likely to be useful to the reader, and the differences between the scheme of the primaries in the Hen-, Pallid, and Montagu's Harriers are well rendered. In addition to the woodcuts there are full-page coloured plates of *Aquila heliaca, A. nipalensis, A. pomarina, Falco barbarus* (juv. et ad.), *F. feldeggi* (juv. et ad.). The letterpress is excellent and not too long.

48. *Mathew's 'Birds of Pembrokeshire.'*

[The Birds of Pembrokeshire and its Islands. By the Rev. Murray A. Mathew, M.A., F.L.S. 8vo. London, 1894. Pp. i–lii & 131. R. H. Porter.]

In his introduction to this interesting volume Mr. Mathew apologizes—rather unnecessarily, we think—for the poverty of Pembrokeshire in bird-life as compared with some other counties. Of course the western position of the county is adverse to the existence of several of the Warblers which annually visit the greater part of England, though we have little doubt that closer examination in the more wooded northern portions of the county would add one or two species to the list. Even as it is, Pembroke, according to Mr. Mathew, adds a new Warbler to the British list in *Hypolais polyglotta,* which the author watched daily in the summer of 1886, though he could not bring himself to shoot the little songster for identification. This, the western representative of the more eastern *H. icterina,* breeds in Spain and in Western France about as far as the Somme, so that, if any member of the genus crossed the channel and visited Pembrokeshire, it would be this one; we have even strong grounds for believing that this species has nested for at least two successive years near Lancing, in Sussex; but at present we must say "not proven" in both cases.

It is, however, for the birds which breed along the coast and on the islands that Pembroke is most distinguished; and Mr. Mathew gives excellent descriptions of the Gannets, Kittiwakes, and other sea-birds at Grassholm, the enormous colony of Manx Shearwaters on Skomer, and the cliff-frequenters of the picturesque island of Ramsey, off St. David's. Capital photographs of these are supplied, and there are two useful maps. According to our experience, it is a melancholy fact that the introduction to a work is comparatively seldom read, except by reviewers; but this omission would be a great mistake in the present instance, for the remarks on migration and distribution form a very important feature of the book.

49. *Menzbier and Severtzow on the Ornithology of Turkestan.*

[Dr. N. A. Severtzow. Ornithologie du Turkestan et des Pays adjacents. Par M. le Docteur M. A. Menzbier. Livr. 4. Text & Atlas. Folio. Moscou, 1894.]

The fourth livraison and accompanying atlas of plates of Menzbier's 'Ornithology of Turkestan,' based upon Severtzow's researches, has lately reached us (see Ibis, 1892, p. 336). The author explains that his time having been taken up with his 'Oiseaux de la Russie,' written in Russian, the present work has been unavoidably delayed, but will now be pushed on to a termination. The present demi-livraison finishes the account of the diurnal and nocturnal Rapaces, and gives us coloured figures of the following species:—*Gyps himalayensis*, *Bubo turcomanus*, *Bubo ignavus sibiricus*, *Syrnium biddulphi*.

50. *Meyer on new Birds from the East Indies.*

[Neue Vögel aus dem Ostindischen Archipel. Von A. B. Meyer. Abhandl. u. Ber. k. zool. u. Anthrop. Mus. Dresden, 1894–95, No. 2.]

Dr. Meyer describes as new *Basilornis galeatus*, from S.E. New Guinea (locality not quite certain), and *Lamprothorax wilhelminæ* (new genus and species of Paradiseidæ), from the Arfak Mountains, New Guinea, and makes remarks on other birds. The new Paradise-bird, a most beautiful form allied to *Lophorhina,* but with lengthened middle tail-feathers, is figured of the size of life.

51. *Millais on the British* Tetraonidæ.

[Game Birds and Shooting-Sketches, illustrating the Habits, Modes of Capture, Stages of Plumage, and the Hybrids and Varieties which occur amongst them. By John Guille Millais, F.Z.S. &c. Second edition. Royal 8vo. London, 1894. Henry Sotheran & Co.]

In 'The Ibis,' 1892, pp. 453–455, we noticed favourably and at some length the first (folio) edition of this work, expressing our regret that its costliness must necessarily restrict the wide circulation it so well deserved. Mr. Millais appears to have taken the hint, and, by omitting the large coloured plates, "made in Germany," he has reduced the book in price and also in size, which is doubly advantageous. In the text we do not find any material alteration, and the illustrations are almost as before; black and white photogravures being substituted for the coloured ones above mentioned. We have now both editions, but the present handy volume will undoubtedly be the one to which we shall more frequently turn, and we can thoroughly recommend it to our readers.

52. *North on Eggs of Australian Birds.*

[Oological Notes. By Alfred J. North, F.L.S. Proc. Linn. Soc. N. S. Wales, ser. 2, ix. p. 39.]

Continuing his interesting notes on the nesting of Australian birds, Mr. North describes the nest and eggs of *Ptilotis analoga,* from North-eastern Queensland, and eggs of a Cuckoo, believed to belong to *Lamprococcyx malayanus,* from the same district. The latter were found in nests of *Gerygone magnirostris.*

53. *Pleske on the Birds of Prjevalski's Journeys in Central Asia.*

[Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen. Auf Kosten einer von seiner kaiserlichen Hoheit dem Grossfürsten-Thronfolger Nikolai Alexandrowitsch gespendeten Summe herausgegeben von der kaiserlichen Akademie der Wissenschaften.—Zoologischer Theil. Band II., Vögel. Bearbeitet von Th. Pleske. Lief. 2, 3. Folio. St. Petersburg, 1890–94.]

After some delay we are glad to receive a new part of Herr Pleske's illustrated work on the Birds of the Prjevalski expeditions, of which we have already noticed the commencement (Ibis, 1890, p. 256). Parts ii. (1890) and iii. (1894) continue the account of the Passerine Birds (Sylviidæ, Timeliidæ, Accentoridæ, Paridæ, &c.), and make many rare and beautiful species of the far east of the Russian Empire known to us.

The following species are figured :—

Plate II. *Phylloscopus tristis*; *P. tristis*, var. *sindiana*; *Reguloides superciliosus*, var. *mandellii.*
" IV. *Pratincola maura*, var. *przewalskii*; *Accentor alpinus*, var. *rufilatus.*
" VI. *Lophobasileus elegans*; *Leptopœcile sophiæ*; *L. obscura.*
" VIII. *Pœcile songara*; *P. affinis*; *P. superciliosa.*
" IX. *Periparus ater*, var. *rufipectus*; *Lophophanes dichroides*; *Sitta cæsia*, var. *amurensis*; *S. przewalskii.*

Plate v. is devoted to eggs. The plates are drawn by Mützel and Keulemans.

54. *Prentis's 'Notes on the Birds of Rainham.'*

[Notes on the Birds of Rainham, including the District between Chatham and Sittingbourne. By Walter Prentis. 8vo. London, 1894. Pp. 92. Gurney & Jackson.]

Mr. Prentis modestly says that perhaps his little book "may contribute something towards a future history of the birds of Kent"; and we trust that such a work may proceed from his pen, for we can think of no one so well qualified for the undertaking. It was during the wet summer of 1860 that Mr. Prentis began to make a study of the birds of his neighbourhood, and he has continued his observations ever since, with results which can hardly be overvalued by the working ornithologist. There is not a particle of padding in the 88 pages, but all is good genuine matter. Mr. Prentis, it will be remembered, obtained the first of the two authenticated

British examples of the Red-throated Pipit. At p. 35 there is an unfortunate—but obvious—slip of the pen as regards the scientific name of the Reed-Bunting, and hypercritical persons may find some of the author's sentences inelegant, but the facts are so clear that "he who runs may read."

55. *Rake on the Breeding of* Nyctidromus albicollis.

[Note on the Breeding of the Nightjar. By the late Beaven Rake, M.D. Journ. Trinidad Field-Nat. Club, ii. p. 100, 1894.]

In Trinidad *Nyctidromus albicollis* lays two eggs on the ground. They are strongly coloured, differing from those of *Caprimulgus europæus* in having more red both in the ground-tint and in the mottling. (*Cf.* Biol. Centr.-Am., Aves, ii. p. 393.)

56. *Reichenow on the Birds of German East-Africa.*

[Die Vögel Deutsch-Ost-Afrikas. Von Dr. Ant. Reichenow. Mit über 100 in den Text gedruckten schwarzen und farbigen Abbildungen nach der Natur gezeichnet von Anna Held. Reimer, Berlin, 1894. 250 pp.]

Dr. Reichenow's work, although issued separately, forms a portion of the third volume of Stuhlmann's 'Mit Emin Pascha ins Herz von Afrika' (see Ibis, 1894, p. 445), which is to be devoted to an account of the zoology of that country under the general editorship of Dr. Möbius. It is evidently designed not so much as a strictly scientific work as to enable future explorers of this portion of German Africa to make themselves acquainted with what is already known and to facilitate further researches. At the same time it will be of very great interest to the scientific student of the Ethiopian avifauna.

Dr. Reichenow commences with a historical account of the many naturalists and travellers who have added to our knowledge of the birds of German East-Africa, and have brought it up to its present standpoint, since Bojer, in 1824, made a beginning by sending to Vienna a collection of birds from Zanzibar. Speke, Grant, Kirk, Thomson, and Hunter are Englishmen to whom the results now arrived at are partly due. But we quite agree with Dr. Reichenow that by far the greater proportion of this vast work has been accomplished by the indefatigable energy of his fellow-countrymen. Hildebrandt, Fischer, Böhm, and Emin Pasha alike sacrificed their lives to the scientific exploration of Eastern Africa, and two others—Stuhlmann and Neumann—who have also done much, are still, happily, living and continuing their collections in the same country. To this historical account is appended a list of 81 publications which refer to the ornithology of German East-Africa.

In the second chapter Dr. Reichenow proceeds to explain the relation of the avifauna of the German East-African Protectorate to that of the whole continent. He points out that the Protectorate belongs mainly to the S.E. steppe-district of Africa, though at the western border it intrudes on the great West-African wood-region. Of the 728 species of birds yet recognized within its limits, about 30 only are western forms, and the remaining 690 are south-eastern. After several pages of instructions as to collecting and preserving birds, the rest of the work is devoted to the systematic account of these 728 species, commencing with the Struthionidæ and ending with the Sylviidæ, according to the fashion of Dr. Reichenow's system. Short characters are given not only of the species, but also of the higher groups, and a number of "keys" are likewise introduced. We regret the entire absence of synonymy. No doubt it would have increased the bulk of the volume considerably, but we think it would have been better to have quoted the references that specially relate to occurrences within the Protectorate. We may also remark that, though exact localities are assigned to each species, no authorities are added for these occurrences. The numerous illustrations, plain and coloured, introduced into the text will be of material assistance to those who use this volume as a handbook.

57. *Reiser on the Avifauna of the Balkans.*

[Materialien zu einer Ornis Balcanica.—II. Bulgarien (einschliesslich Ost-Rumeliens und der Dobrudscha. Von Othmar Reiser, Custos am Bosn.-Herceg. Landes-museum. Wien, 1894. 1 vol. 204 pp.]

The Balkan, with its surrounding districts, has long remained one of the least explored parts of Europe as regards its birds, and we shall all welcome the contribution to our knowledge of its ornis now before us. Herr Reiser, the Custos of the Museum at Sarajevo, in Bosnia, has made three successive journeys over the area treated of for the purpose of collecting, and has, besides, the vantage-ground of his residence near one end of the Balkan range.

The author commences with a lively narrative of his excursions in 1890, 1891, and 1893, the routes of which are plainly indicated in an accompanying map. To this are added a register of preceding authorities on the subject, and a nominal list of the birds of Bulgaria and the Dobrudsha, which, so far as is yet known, is shown to embrace 363 species, besides some others uncertain. The special portion of the work, which follows, contains a series of field-notes and critical remarks on the birds of Bulgaria, as observed by the author and his assistants, or as met with by former authorities.

Among the species of particular interest that are mentioned we remark *Saxicola amphileuca*, *Accentor collaris*, *Parus lugubris*, *Otocorys penicillata*, *Euspiza melanocephala*, *Dendropicus syriacus*, and *Turtur risorius decaocto*. Full notes are given about the Eagles and Vultures. The following species are figured:—*Buteo desertorum*, *Saxicola amphileuca*, *Passer hispaniolensis*, and *Otocorys penicillata* and its eggs (concerning which see Ibis, 1894, p. 140).

58. *Rhoads's Edition of Ord's 'Zoology.'*

[A Reprint of the North-American Zoology, by George Ord. Being an exact reproduction of the part originally compiled by Mr. Ord for Johnson and Warner, and first published by them in their Second American Edition of Guthrie's 'Geography' in 1815. Taken from Mr. Ord's private annotated copy. To which is added an Appendix on the more important Scientific and Historic Questions involved. By Samuel N. Rhoads. 8vo. New Jersey, 1894.]

Strictly speaking, as we are told in the introduction, this is not the second American edition, for there was a quarto, which is not very rare, dated 1794–95, but it is the second of the three editions published by Johnson and Warner. Both the aforesaid 4to, however, and the edition of 1809 contain no attempt at systematic zoology, and the edition of 1815 is the first of any value. Of the last of Johnson and Warner's editions (that of 1820), Mr. Rhoads has been able to find one copy. Of the 1815 edition Dr. Coues, well known for his bibliographic zeal, was able to find only one damaged example, and the announcement of its rarity was followed by the disappearance of the copy belonging to the Academy of Natural Sciences, Philadelphia. Mr. Rhoads had the good fortune to discover a copy in the College of Physicians of that city, and he has done well in reprinting it; the value of the work as a literary curiosity being now greatly increased by the appendix furnished by the editor.

59. *Ridgway on new Birds from the Galápagos.*

[Descriptions of Twenty-two new Species of Birds from the Galápagos Islands. By Robert Ridgway. Proc. U.S. Nat. Mus. xvii. p. 357, 1894.]

A very large and valuable collection of birds from the Galápagos, made by Dr. G. Baur and Mr. F. C. Adams in 1891, was referred to Mr. Ridgway for determination on the return of these gentlemen to America, but the study of the specimens has been unavoidably delayed. Mr. Ridgway now describes as new the following twenty-two species:—*Nesomimus bauri*, *N. bindloei*, *N. adamsi*, *Certhidea salvini*, *C. bifasciata*, *C. mentalis*, *C. albemarlei*, *C. luteola*, *Geospiza barringtoni*, *G. propinqua*, *G. bauri*, *G. albemarlei*, *G. fratercula*, *G. debilirostris*, *G. acutirostris*, *Camarhynchus rostratus*, *C. productus*, *C. salvini*, *C. affinis*, *Pyrocephalus carolensis*, *P. intercedens*, and *P. abingdoni*.

It will be observed that these are all referred to genera already known to occur in these islands. Mr. Ridgway, moreover, finds it necessary to unite the generally recognized genera *Geospiza* and *Cactornis*, because some of the new species are of intermediate structure and bridge over the gap between these two genera.

60. *Ridgway on new Birds from the Mascarene Subregion.*

[Descriptions of some new Birds from Aldabra, Assumption, and Gloriosa Islands, collected by Dr. W. L. Abbott. By Robert Ridgway. Proc. U.S. Nat. Mus. xvii. p. 371, 1894.]

Mr. Ridgway bases his new species on specimens in the collection made by Dr. W. L. Abbott (*cf.* Ibis, 1894, p. 314), of which he has made further studies, with assistance rendered by Prof. Newton. The following species are described:—*Zosterops aldabrensis*, *Z. madagascariensis gloriosæ*, *Cinnyris aldabrensis*, *C. abbotti* (from Assumption Island), *Centropus insularis* (from Aldabra and Assumption), and *Caprimulgus aldabrensis*.

61. *Sharpe and Wyatt on the* Hirundinidæ.

[A Monograph of the Hirundinidæ, or Family of Swallows. By R. Bowdler Sharpe, LL.D., and Claude W. Wyatt. Parts XVIII.-XX. 4to. London. Sotheran & Co.]

We are much pleased to welcome the concluding treble part of this work, which, as now completed, is divided into two volumes, although the pagination and numbering of the plates are continuous throughout. In it the Swallows are fully illustrated by 64 plates and maps showing the geographical distribution of every genus.

The only plate given in these parts is that of *Psalidoprocne orientalis*, besides which there is a series of charts illustrating the distribution of the various genera.

62. *Witherby's 'Forest Birds.'*

[Forest Birds, their Haunts and Habits: short Studies from Nature By Harry F. Witherby. 8vo. London, 1894. Kegan Paul & Co.]

Mr. Witherby's 'short Studies from Nature' contain an account of his experiences with eight familiar birds which he has met with in the New Forest and elsewhere. They are illustrated by reproductions of eight photographs, taken from the cases in which he has mounted the specimens of these birds in their natural attitudes. The letterpress is pleasingly written, but there are some slips (such as speaking of the

Nuthatch as belonging to the Scansores) which ought to have been avoided, and we cannot say that we are altogether satisfied with the plates.

XXIV.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed to the Editors, since our last issue:—

Sirs,—I have been engaged for some years in collecting information about the methods of catching wild birds employed in different parts of the world. This autumn I visited the North of Italy, to study the Italian *Uccellande*.

Professor Giglioli, Mr. Tait, and the Dean of Cairo have, among others, given me valuable aid. Mr. Littledale, of Baroda, has already forwarded a most interesting collection of snares. It occurs to me as possible that some of our Foreign Members, or brother Ibises residing abroad, may be kind enough to help on these enquiries. At all events I venture to make known my anxiety to explore the subject as thoroughly as circumstances may render possible.

The old Italian works of Antonio Valli and Olina are full of interesting particulars; but I hope to trace out the evolution of fowling on a wide basis of facts.

Yours &c.,

Carlisle, Dec. 13th, 1894. H. A. Macpherson.

Sirs,—As I visited the Zurich Museums a few weeks after Dr. Sclater, I should like to supplement his information with a few remarks. It is perfectly true that there is no Swiss collection of Aves in the University Museum; but it must not be inferred that there is no Swiss collection of birds at Zurich.

There is a capital museum of Swiss birds and mammals at the Zürichhorn, and the proprietor (Mr. Nägeli) is most obliging in furnishing information to visitors. I was delighted to find what a variety of birds visit the Canton of

Zurich on their annual migrations; among the rarer visitants being examples of *Fuligula rufina, Fuligula nyroca,* and *Hydrochelidon leucoptera.* The series of *Cyanecula wolfi* struck me as particularly good. It included one adult male with a perfectly blue, unspotted gorget. Mr. Nägeli was good enough to supply me with a nestling of *Accentor collaris* for the Carlisle Museum.

Yours &c.,
Carlisle, Jan. 22nd, 1895. H. A. MACPHERSON.

SIRS,—I see in your October number of 'The Ibis' a note, p. 557, as to a statement by Mr. Hartert as to the way birds of prey carry their legs.

I can thoroughly endorse his statement that *Milvus govinda* carries its legs stretched out behind it with the claws closed.

The Kites here do just the same. I have particularly noticed them since reading your note, and they invariably carry their legs in that position.

Yours &c.,
W. WILFRID CORDEAUX,
Queen's Bays.

[P.S.—In future my address will be :—

21st Hussars,
Cairo, 23rd January, 1895. Secunderabad, India.]

SIRS,—From the last volume of 'The Ibis' I see that two British collectors, Messrs. A. C. and A. Chapman, have been visiting our shores in the summer of 1893. Without any regard to the laws, in the close-time, they have been shooting birds and collecting eggs, not only of our common species, but especially of the rarest, such as the Avocet, the Black-tailed Godwit, &c., which are still lingering only in a few places. Rumours of similar visits by Englishmen in former years have reached me. May not public opinion be aroused in England against such proceedings towards their neighbour-country? In the name of European ornithology we appeal to you to help us in preserving some of the few places in Europe still left to the birds. You might inform the Members of the B.O.U., and others, that we do not wish to have visitors of that kind, and that we are now doing our best to make the overseers and the police at the places in question do their duty. Any naturalist, desirous of *seeing* our rare birds in their haunts, will be welcomed; but collecting can be allowed only to a very limited extent and under control. Mr. Chapman's article contains nothing unfamiliar to Danish ornithologists, except the "Pelicans," from the description, however, evidently *Larus argentatus* (a species not otherwise mentioned, though it is common on the coast), seen through dim air. I know our west coast very well, and I have frequently observed how birds may look wonderfully large when standing on the flat shore close to the water, the humid air producing what we term "hildring," a deceiving view.

Yours &c.,
HERLUF WINGE.

Universitets Zoologiske Museum,
Kjöbenhavn.
2nd February, 1895.

SIRS,—In reply to Herr Herluf Winge's accusations, here are the facts:—In 1889, previous to a first visit to Denmark, one of us endeavoured to obtain the "limited licence" mentioned to secure a few specimens "under control"; but after long correspondence (which has been preserved), this was refused, on the ground that the applicant was a foreigner. On our second visit, in 1893, we did not therefore further trouble the authorities at Copenhagen, but took a gun, with *twelve* cartridges, to obtain certain desired specimens. No infraction of Danish law, however, was committed by us; for the local authorities in Jutland at once furnished us with licences (for which we paid), available for 14 days; the only stipulation being that we should not shoot the "Pomeranz Fögel." But since none of our Danish friends were able more precisely to identify that mysterious fowl, we remain in the dark as to whether we inadvertently committed the crowning crime of its destruction.

Herr Winge states that we "specially collected" some of the *rarest* of Danish birds; but he only specifies two—the Godwit and the Avocet. Of these we shot one male and one female of each—*total, four*—and the whole of our "collecting" *was on the same moderate scale.* We have submitted to the Editors of 'The Ibis' the whole catalogue of crime, but the list is really too paltry and insignificant to be worth printing. Suffice it to say that fewer than two dozen specimens *in all* were brought home, and of these several were obtained from local gunners, who seem to shoot right merrily throughout the close-season. On some days the pop-popping of guns was going on in every direction, afloat and ashore, and these people were shooting for shooting's sake—a very different thing from the discriminate selection of a few specimens.

Again, our critic reproaches us with taking eggs. But is he not aware that every egg found on these marshes is swept up at regular intervals all through the season, for food? The eggs of Duck or Wader, Gulls and Terns, Avocet, Reeve, Pintail, and the rest, all go in thousands to feed the hungry Jutlander,—so what could our few specimens matter? If Herr Winge is not aware of these facts—of the indiscriminate shooting and egging—then he does not know the Jutland coast, as he claims to do and as we really do; if he is aware, then his attack on us is unwarranted and hardly ingenuous.

The eggs of Godwit, we may add, are safe enough, as these birds breed sporadically on deep and dangerous bog, where no one but such hardened criminals as ourselves care to venture. Herr Winge is also wrong in classing the Avocet as "rare"; it breeds in scores—if not hundreds—together in West Jutland.

Herr Winge doubts our Pelicans, and suggests that they were Gulls seen under "*hildring*" conditions. But such a mistake is not at all likely to be made by men accustomed all their lives to the observation of Wildfowl under all or any atmospheric conditions. Moreover, there was no "hildring" on that bright May morning when the eight Pelicans sat preening themselves off the salt-spit in that Cimbrian "marisma"; and if Herr Winge will refer to the description, he will see that there was no lack of other birds alongside the Pelicans (including *Larus argentatus*) for comparison of their relative sizes.

Yours &c.,

Moor House, Leamside, ABEL and ALFRED C. CHAPMAN.
February 23rd, 1895.

SIRS,—I am desirous of expressing my thanks to the authorities of the Smithsonian Institution, Washington, D.C., and in particular to Mr. F. A. Lucas and Dr. R. W. Shufeldt, for their prompt response to my appeal in 'The Ibis' for last April, in which I asked for nestlings and embryos for the purpose of a careful study of the structure and distribution of the so-called "nestling-down" (neossoptiles). Through the intermediation of these gentlemen the whole of the U.S. Government collection has been placed at my disposal.

This is the only response that my letter has evoked, though I had hoped that my appeal would have aroused some interest in a question about which, as yet, we know little. Possibly, when the paucity of facts relating to this subject becomes more fully realized, help will be forthcoming. If collectors abroad could be induced to send home consignments of embryos, newly-hatched nestlings, and adults—preserved in chromic acid in the case of the embryos—they would render us good service, inasmuch as we might then hope to know a little more thoroughly the species at present to hand.

Repeating the request I made in 1894,

Yours &c.,

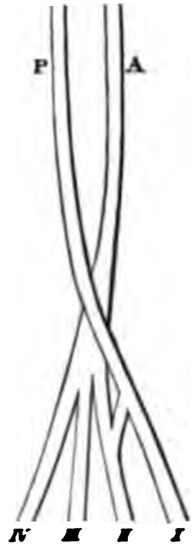
Department of Comparative Anatomy, W. P. PYCRAFT.
University Museum, Oxford,
10th February, 1895.

SIRS,—By a slip of the pen, in the last number of 'The Ibis,' p. 166, I wrote "Sir John" for "Sir James C. Ross."

Yours &c.,

The College, Durham, H. B. TRISTRAM.
Jan. 7, 1895.

The Deep Plantars in the Trochilidæ.—On page 617 of Newton's 'Dictionary of Birds' is a figure, V^c, purporting to show the arrangement of the deep plantars in the Trochilidæ, while on the opposite page occurs the following emphatic statement: "any other description and figures of these Trochiline tendons are either incorrect or misleading." Now I regret exceedingly to be compelled to differ from Dr. Gadow, but at the same time I have no hesitancy in saying that the figure and description given in the 'Dictionary of Birds' are probably as incorrect and misleading as any that ever have been, or ever will be, published. Both Dr. Shufeldt and myself have had the misfortune to describe the deep plantars of the Trochilidæ as being, like those of Passeres, schizopelmous, an error to which I will refer later on. On going carefully over the subject again I find that the *flexor longus hallucis* is connected by a short branch with that division of the *flexor perforans digitorum*



Deep plantars of *Lampornis dominicus* and *Florisuga mellivora*.
A. Flexor perforans digitorum.
P. Flexor longus hallucis.

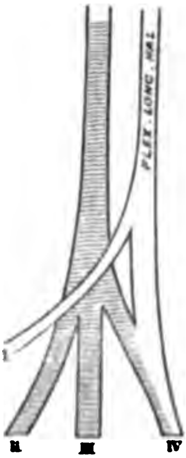
which runs to the second digit, the arrangement being as shown in the accompanying figure, which is the result of some dozen drawings made both with and without the camera lucida. My friend, Dr. Stejneger, who also examined the specimen, arrived independently at the same result. There is a considerable amount of connective tissue, a strong vinculum in fact, about the tendons where they cross, and in removing this Dr. Shufeldt and myself must have severed the narrow branch connecting the f. l. h. and the f. p. d. II. It is, of course, barely possible that this branch may sometimes be absent, but I do not give myself the benefit of the doubt. One thing, however, I can assert most positively; I have never dissected a Humming-bird's foot in which the *flexor perforans digitorum* did not give off three branches, to digits II. III. IV. A very simple experiment will convince anyone that the *flex. per. dig* sends a branch to the fourth digit; if the flexors of I. II. III. be severed, and the *flexor longus hallucis* carefully removed, a pull on the *flex. per. dig.* will flex the fourth digit, which it could not possibly do were the tendons arranged as figured in the 'Dictionary of Birds.'—FREDERIC A. LUCAS.

Washington, D.C., U.S.A.

I AM sorry for having stood godfather to a diagram which has turned out to be the most incorrect and most misleading of all. The gentleman to whom I felt indebted for it has lost no time in informing me that it is quite wrong; he has sent me another, vouched to be correct, in which the fl. prf. supplies each of the front toes with a strong tendon, while the fl. h. "goes to the 1st digit and sends slips to the 2nd, 3rd, and 4th; in the case of the latter two, the slips do not amount to more than a few fibres." Mr. Lucas fully agrees with this statement. The little slips to digits 3 and 4 are not represented in Mr. Lucas's diagram. They are, however, rather important as last remnants of a regular four-split condition of the tendon of the fl. h. Consequently those most concerned in this discussion, namely, the Humming-birds themselves, come off best, because they prove to be still nearer related to the Cypseli than I have been able to show.—H. Gadow.

Cambridge, March 1st, 1895.

Deep Flexor Tendons of Macropteryx.—Mr. Lucas also sends us a note upon the deep flexor tendons of the Swift (*Macropteryx coronata*), which appear to differ from the tendons of other Cypseli. In *Cypselus alpinus* (*cf.* Garrod, P. Z. S. 1875, p. 344) the two tendons of the deep flexor muscles completely blend together before any tendons to the toes are given off. But in *Macropteryx* the flexor hallucis gives off a slip to the hallux, and is then continued on to blend, not with the undivided tendon of the flexor communis, but with that branch of it which goes to supply the fourth digit. This curious arrangement is shown in the accompanying cut. It does not agree with any of the seven modifications of the arrangement of these tendons described and figured by Garrod. But it is almost exactly like the arrangement of the tendons in *Scopus umbretta*, figured by Beddard (P. Z. S. 1891, p. 18, fig. 4 *b*).



The Fertilization of Flowers by Birds.—We are well accustomed to hear of the fertilization of flowers by insects;

that birds, in some cases, perform the same function is, we believe, a new discovery. In 'Nature' for January last (vol. li. p. 235) Mr. Maurice S. Evans, writing from Durban, Natal, gives some interesting details as to the mode of fertilization of two species of parasitic plants of the genus *Loranthus*—*L. kraussi* and *L. dregei*—which grow on trees in that district. It appears that the fecundation of *Loranthus kraussi* is entirely due to the labours of two species of Sun-birds, *Cinnyris olivaceus* and *C. verreauxi* (*cf.* Sharpe's ed. of Layard's Birds of S. Afr. pp. 309, 310), which frequent these flowers in great numbers. "A little quiet watching," says Mr. Evans, "will show the birds at these flowers, splitting open flower after flower, and getting head and bill covered with pollen in moving about, undoubtedly fertilizing the capitate receptive stigmas of other and older flowers." In order to ascertain whether the flowers of the *Loranthus* would be fertilized without the aid of the Sun-birds, Mr. Evans covered a small branch of them containing from 80 to 100 blossoms with a net, and found that not one of the blossoms so covered set seed. After careful watching he came to the conclusion that this *Loranthus* is quite sterile, without the external aid supplied by the birds. After the fruit is ripe another bird, a Barbet, *Barbatula pusilla,* further assists the propagation of the *Loranthus* by eating the covering of the berry and rejecting the seeds and the viscid matter around them. To clear away these the Barbet wipes its bill upon a branch, to which the seeds of the *Loranthus* adhere by the viscid matter and germinate.

Somewhat similar facts are related by Mr. Evans respecting the mode of fecundation of a second species of *Loranthus*, *L. dregei,* which grows on the coastlands of Natal, usually parasitic upon an introduced syringa, *Melia azadarach*. He believes that this plant also is "absolutely dependent" on the Sun-birds *Cinnyris olivacea* and *C. verreauxi* for its sexual propagation.

Obituary.—Mr. ALFRED FORBES SEALY, one of the founders of the B.O.U., died recently in India. Possessed of a private fortune, he resided at Cambridge for several years after he took his degree at that University, and his rooms became the rallying-point of the local naturalists, for he was an ardent ornithological and entomological collector. He was induced to take a strong interest in native education in India, and, accepting the office of Principal of a college established by the Rajah of Cochin, one of the independent sovereigns, he left England about 1861. He at first attempted to continue his pursuits in India, but soon found his duties too onerous to render that possible, and, though retaining to the last his interest in Natural History, his connection with it practically ceased from the time of his departure, and in 1867 he withdrew from the B.O.U. His rather large collection of stuffed birds was dispersed by sale at Stevens's rooms in 1867—on which occasion a purchaser "borrowed" the manuscript catalogue, which, to the detriment of other buyers, has not since been seen. His collections of birds' eggs and British insects he gave to the Museum of the University of Cambridge. Mr. Sealy came home some three or four years ago with the intention of remaining in this country; but so earnest an appeal was made to him to return to the scene of his former labours that he consented to go out to India again in 1893, and therefore had not been much more than a twelvemonth in that country when an apoplectic seizure terminated his life. Mr. Sealy was the first to ascertain and announce the fact that *Porzana baílloni* was a native of England, it having been previously supposed to be but a casual visitor. This he did in 'The Zoologist' for 1859 (p. 6329), but beside some other notes in the same journal we believe his only contribution to ornithological literature was his 'Classified List of the Names and Latin Synonyms of the British Birds' (Cambridge, 1853).

EDWARD HARGITT, R.I., M.B.O.U., was born on May 3rd, 1835, at Edinburgh, where his father, the late Charles Hargitt, a well-known professor and composer of music, then resided. As the latter possessed a notable gallery of pictures and was a great lover of art, Edward Hargitt had ample inducement to become a painter, and accordingly we find him a student in the schools of the Royal Scottish Academy under Robert Scott Lauder, having for companions Mr. W. Orchardson, R A., Mr. J. MacWhirter, R.A., the late John Pettie, and other well-known artists. Up to 1880 his works were frequently to be seen at Burlington House, but his forte lay in water-colours rather than in oils, and to the former he devoted the greater part of his attention, especially after his election to the Institute in 1887. Addicted to Scottish scenery, his work led him into many of the wildest and most picturesque districts of the Highlands, where, during many years, he devoted much of his time to ornithology. At that time few men of kindred tastes knew the remoter districts so well, and even now it may be said that few know them better than our deceased friend did. In company with Auguste, the younger brother of Rosa Bonheur, he visited some of the least frequented districts of the French and Spanish Pyrenees; he explored portions of Normandy with the veteran Nourry, of Elbœuf; and everywhere he acquired information, which was always freely placed at the disposal of his ornithological acquaintances. One strong feature was the interest he showed in the study of birds in down and fledgling plumage, a subject which had then received scant attention in England; and it was owing to his relationship with Sysselmand Müller, of the Færoes, that the early stage of the Fulmar Petrel was first made known in the 4th edition of Yarrell's 'British Birds,' in 1884. His studies and collections embraced all the birds—with their eggs—of the Western Palæarctic region; and when these collections swelled to a size incompatible with the accommodation he could afford, the bulk of the birds passed into the British Museum, while the eggs were acquired by Mr. Seebohm, to form part of the entire collection subsequently presented by the latter to the nation. The immediate cause of want of space for these was Mr. Hargitt's selection of the Woodpeckers for special study, and in 1890 he produced vol. xviii. (Picidæ) of the 'Catalogue of the Birds in the British

Museum,' a work inferior to none for conscientious treatment. Besides this, he worked continuously at a series of paintings to form a monographical gallery of the Picidæ, illustrating every type in British and foreign museums, and giving coloured portraits of every variation in plumage. It was only on February 20th that we saw him last at the Meeting of the B. O. Club, full of justifiable pleasure at having completed his twelve years of hard work, and prepared for private circulation the sixteen or seventeen stout volumes to which this elaborately illustrated monograph will extend. He was never strong; for years he had been an uncomplaining martyr to asthma; illness set in, and he died on March 19th. A very quiet, unobtrusive man, generous almost to a fault, chivalrous in the highest sense of the word, few men have passed away so deeply and so deservedly mourned by those who knew him best.

We have just heard, with great regret, of the death of **ALEXANDER GOODMAN MORE**, M.B.O.U., formerly of the Dublin Natural History Museum; also of the decease of our Foreign Member **GEORGE N. LAWRENCE**, of New York, a veteran ornithologist, full of age and honour. To do justice to the merits of these Members we must defer their obituary notices to our next number.

News has also reached us of the sudden death of Mr. R. **CHAMPLEY**, of Scarborough, Yorks., a collector who was well known in ornithological circles. He was the possessor of no fewer than nine eggs of the Great Auk (*Alca impennis*), and at various times he contributed valuable information respecting the existing skins, eggs, and bones of this now extinct bird. His name is constantly noted in Mr. Symington Grieve's monograph.

One of the last of the old race of North-Country naturalists has passed away by the decease of Mr. **CHARLES MURRAY ADAMSON**, of Jesmond, near Newcastle-on-Tyne. He was a friend and contemporary of John Hancock, and the author of 'Studies of Birds,' 'Scraps about Birds,' &c., delightfully written.

THE IBIS.

SEVENTH SERIES.

No. III. JULY 1895.

XXV.—*Notes on South Formosa and its Birds.*

By John D. de La Touche.

I.—*Narrative of the Expedition of* 1893.

I left Amoy on the 30th October, 1893, for Tainan *, the port in South Formosa open to foreign trade, Mr. A. Macgowan (of Messrs. Tait & Co., Amoy) having kindly asked me to come over and visit him at Anping, and thence go up country to collect birds.

The morning of the 31st saw us not many miles distant from the coast. The high mountains, which form the backbone of Formosa, appeared in the far distance, plainly visible at sunrise, but soon to disappear as the sun rose over the horizon. Drawing near the low surf-beaten coast, we headed for a clump of trees and some houses, surmounted by a low mound, where the old Dutch fort stands, and anchored outside the Anping bar, about a mile and a half from the shore. On landing I found breakfast waiting at Mr. Bain's house, during which I ascertained that an expedition to Baksa, a place some 25 miles east of Anping, had been planned, the party to consist of Messrs. Bain, Macgowan, and myself. The English missionaries, who have a mission-house there, had put it at Mr. Bain's disposal. Thence we were to go on to Lakuli, about 15 miles further inland.

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* Formerly called Taiwanfoo, the capital of South Formosa. It is about three miles inland. The shipping ports of Tainan are Takow and Anping, but the former, some 25 miles down the coast, is now almost deserted.

The country around Anping is perfectly flat; it is divided into cultivated fields by wide ditches, with banks overgrown with high grass. There are but few trees, and small bamboo-groves appear here and there at a certain distance from the sea. A short walk that I took on the afternoon after my arrival was of little interest, the only birds noticed being a few small Waders (*Ardea garzetta*), several *Lanius schach*, *Turtur chinensis* (one), some small birds frequenting long grasses and pandanus-hedges, which I took to be *Prinia inornata*, *Ixus sinensis*, and a flock of *Buchanga atra*, one of which I shot.

I went out one morning after Snipe with Capt. Hodgins, of the steamer I came in. As we went up the creek in a "tekpai" (a raft made of large bamboos) towards the Snipe-grounds we saw a good many shore-birds on the mud-flats, and a large flock of white birds in the distance like Spoonbills, but we were too far off to be sure. We landed a few miles up the creek on a marshy place divided into fields by high banks, on either side of which were wide ditches. Snipe-shooting in this locality seems to be specially arduous work, as, in order to get at the birds, one has to cross the ditches, sometimes 3 feet deep, and often to walk amongst rushes with water up to one's knees; the Snipe, strange to say, being found in these places. We saw several—all, I believe, *Gallinago cælestis*; also many Golden Plovers (*Charadrius fulvus*), *Totanus glareola*, various Sand-Plovers and Stints, and a few *Buchanga atra*, with strange Formosan ways new to me. A good many Larks (*Alauda wattersi*) were about the dry fields, as well as Pipits (*Anthus cervinus*) and Wagtails (*Motacilla taivana*). We saw also a large gathering of Grey Herons (*Ardea cinerea*), several *Ardea alba*, and a smaller species, which I took to be *A. garzetta*. We were back in Anping at 10.30, as the heat was very great.

On Nov. 3rd Mr. Bain and I started for Baksa. We had a delightful ride along the fine wide military road which leads up to the city suburbs. On reaching the streets we took to our chairs. I noticed a few cage-birds in the shops—*Trochalopteron taivanum*, Larks, and Crested Mynahs. One or two wretched Buff-backed Herons (*Bubulcus coromandus*), with their white winter plumage dyed pink, were seen in one dirty lane. It is not an uncommon sight in some Chinese towns —Amoy, for instance—to meet with these birds, perfectly unconcerned, standing or wandering in some filthy alley.

Leaving the city Taiwanfoo, we travelled through some charming country. The road, sometimes a narrow lane, but often a wide track bordered by hedges of pandanus and other southern plants, led through fields of magnificent sugar-cane from ten to twelve feet high. Now and then we came upon a picturesque village lost in a grove of bamboos, its houses standing in yards or gardens hidden from the wide sandy tracks by screens of tall prickly bamboo. Fine old mango-trees occasionally spread their branches over the way, their stalwart trunks and bold, though scanty, foliage making a pleasing variety in the landscape. As we progressed further inland water flowed over the road, which became really a wide shallow watercourse, contained within high banks, usually covered with luxuriant vegetation. There were a good many birds about the villages—*Myiagra azurea*, *Trochalopteron taivanum*, *Ixus sinensis*, *Zosterops simplex*, &c., but I did not notice any Mynahs, which seem to be very scarce in South Formosa.

We halted for a short time towards 11 A.M. at a pretty little village called Kuhsia. The next place we came to was Kwong-ti-bio, a populous market town, within a mile or so of the hills. We halted here for tiffin, taking shelter in a neighbouring temple. After the usual delay, inevitable when one has a large party of carriers, we started off again and went on through rice-fields until we reached the first hills —low mounds with scanty vegetation, the most conspicuous shrub upon them being the guava. Beyond these was a shallow river, flowing under some low sandstone cliffs, the banks of which we followed for some time. I saw here a good many Sand-Martins (*Cotile sinensis*?), also Wagtails and Sand-Plovers of some kind, probably *Ægialites cantianus*. The scenery soon began to get very beautiful; the road led once more along the stream, and before long became merged in it, so that the carriers and bearers walked in the river-bed, which was firm, the water being shallow and muddy. Gradually woods appeared on the hill-sides, and these became steeper and steeper, and hemmed in the stream more closely, till we arrived at a spot where the hills seemed as if they would altogether stop our progress. The bed of the river had become rocky and pebbly, and the stream here issued forth out of a narrow pass, formed by the steep wooded slope on one side and a wall of sandstone cliffs on the other. The trees growing over the stream closed above our heads as, scrambling up the bank to avoid a deep pool, we crossed a narrow bamboo bridge which spanned the rivulet under their shade, and a few yards further on emerged into a pretty glen, one side of it shut in by a perpendicular wall of sandstone, while on the other the wooded hills came down in a rapid incline to the stream wending its way to the dark leafy tunnel we had just passed through.

From this glen the road keeps rising till the first tall ridge overlooking the Baksa valley is reached. Now it follows the hill-sides, a mere cut on the steep slopes, now it wanders up and down, into the valleys and straight over the hills, through tangled jungle and woods. Sometimes we found ourselves on a ridge overlooking ravines, whence the soil had been washed away, and which appeared as if furrowed by the tropical rains.

The formation of this mountainous country is of blue clay, the lower hills near the plain appearing to be formed of soft sandstone. When woods occur the trees do not seem to attain to any great size; they are mostly "lung-ngan," with here and there a few date-palms and an occasional mango appearing above the jungle and undergrowth of brushwood, sword-grass, bamboos, &c. I did not see or hear many birds on the way; in fact, the country seemed singularly devoid of animal life. *Alcippe morrisonia, Pomatorhinus musicus, Ixus sinensis, Munia topela, M. acuticauda,* and a Dove or two were about all that I noticed.

Towards evening, as we drew near the top of the range, the ascent became very rapid. As far as we could see, for the evening haze was beginning to settle and had hidden the plain from view, a mass of steep and sharp-crested hills, the blue clay showing on their southern slopes, but many of the hill-sides still clothed in dense vegetation, unrolled itself in a succession of peaks, of which the outlines became gradually fainter and more rounded in shape as they faded away and disappeared in the evening mist. After passing through a belt of wood we reached the top of the hills, and, wandering down in the semi-darkness, found with some difficulty the inn where we were to spend the night, Baksa being unattainable that evening. The inn was not exactly a palace; still it surpassed my expectations, as it contained a small closet where Bain was able to put up his camp-bed, and I found ample space in the adjoining public room to sling my hammock.

Next morning we were up and stirring before daybreak, and as dawn appeared the exterior of our hotel and its surroundings were revealed to us. From the back of the inn, a long mud-walled shed, with a narrow yard in front and a belt of bamboos enclosing the whole, we overlooked the Baksa valley. The panorama was superb. Below us the slopes of our range came down in a rapid descent, the hill-sides all clothed in the most gorgeous tropical verdure—beautiful woods alternating with stretches of jungle formed of tall grasses and plants of all kinds intermingled in a wild and glorious confusion. On our left the valley was somewhat uneven, with steep hillocks rising up singly, or else forming a sort of connection with the opposite range. On the right the valley opened out into a flat cultivated plain, where groves of feathery bamboos, doubtless hiding farm-houses, were dispersed here and there in the midst of the rice-fields. The plain seemed to continue right out to the south, and probably extends to the Takow plain. Behind

Baksa, which lay a little to the N.E., snugly ensconced within its belts of bamboos and trees, and in front of us, were ranges of higher mountains, running nearly parallel to one another, and gaining in altitude as they receded towards the E. till they rose to a height of at least 7000 feet. We counted six ranges, including that on which we stood. The night before Bain's aneroid had registered 29·30 at the inn; the height of the range we were on was therefore 1800–2000 feet at the highest point. It is called "O Soaⁿ" (Black Mountain) by the natives of that locality.

While preparations were being made for a start I strolled on, following the path, which wound down the hill through thick woods and jungle. I heard many birds of various kinds, chiefly of the *Garrulax* tribe, but the cover was too thick, and I was unable to see or obtain anything of interest. It took us about an hour and a half to reach the foot of the hills; an hour's further walking brought us to the Baksa mission-house. Baksa is a picturesque little village, inhabited by Chinese and Pepohwans. The latter are the original inhabitants of the plain and have adopted Chinese civilization. They are agricultural, but are gradually being ousted from their lands and pushed back towards the hills by the Chinese. The men seen here and subsequently wore the *queue*, and in dress did not seem to differ much from the Chinese, but the women have their own way of dressing the hair, winding it round the head. Fine large eyes are characteristic of this race, and the cast of features is bold and rather handsome.

The village of Baksa is situated on flat ground at the foot of the second range, but several well-wooded hillocks, more or less connected with the higher hills, rise close by; most of them (as I found afterwards) are impenetrable, or very difficult of access, on account of the thick cover and prickly bamboos.

We now made enquiries as to the best way of getting to Lakuli, but had finally to give up the idea of going there, as it was nearly a day's journey further on, and our time was limited. So we decided to go on in the afternoon to Kamana, another station of the English missionaries, said to be not far off, just over the next hills. We were informed that Mr. Holst had remained ten days here, and had left for Lakuli on the previous evening. This was another reason for not going there, as we should have interfered with each other's collecting. It was too hot to venture out of doors, so I helped my servant to skin some birds shot on the way, and whilst thus employed I purchased a young live "Hwanei" (*Trochalopteron taivanum*), which I afterwards brought back with me to Amoy. I also engaged the services of a native hunter, who promised to shoot for me that afternoon and on the following Monday; but he refused to shoot on Sunday, for religious reasons, being a Christian.

At 3 we resumed the march, and, following a steep path which ascended the hills at the back of Baksa, toiled up to their summit. There, much to my disgust, I discovered Kamana lying some three miles to the N.E., among paddy-fields, far away from the surrounding hills. The mountains on this side were nearly bare of trees, only sword-grass jungle or short grass covering their nakedness. This not very inviting prospect led to a conference as to the advisability of going on; and we decided to return to Baksa and make the best of the place till the time came for the return to Anping. On getting back to Baksa I found my shooting-man with two fine specimens of the Large Scimitar-bill of Formosa (*Pomatorhinus erythrocnemis*) and an *Alcippe morrisonia.* Later in the evening another man brought me two specimens of *Alcippe brunnea,* neatly wrapped in paper, showing that Mr. Holst had trained the natives to collect for him. Ants were a great pest here.

We were up again at dawn next morning, Nov. 5th, and started each in a different direction. Bain had as guide a bright little boy, son of the caretaker, who was to take him to some good partridge-ground; and I went off with a stolid son of Han, who took me up the hills behind the village, along the rocky bed of a now dry torrent. It was rather trying work and not at all interesting. The sword-grass jungle grew thick on either bank of the torrent, meeting over our heads, and in places we had to force our way through it, the grass cutting my hands severely. At last we managed to get out into the open and climb up the side of the hill. There the cover (chiefly grass), though thick, was low, and quantities of small birds were disporting themselves out of reach, and generally out of sight too. They appeared to be Warblers of all sorts and Munias. I distinguished among the latter several *M. formosana*; but they soon flew down the hill and hid in the jungle. Wandering on, I came suddenly on a covey of Partridges sunning themselves near a small patch of rice. They were, I believe, the *Bambusicola sonorivox*. High up on the hill some Doves were cooing, the deep "cŏŏ-cŏŏ-rōō-cŏŏ-cŏŏ" being that of the *Turtur rupicola*. These Doves keep generally to the higher parts of the hills, where, perched on some solitary tree, they call to each other all day long. I now found myself in a ravine at the foot of the range, with high sword-grass jungle all round me. Several birds were calling, and I recognized the whistle of some large *Pomatorkini*. There were two, calling to each other, both of them invisible. The call, a deep melodious whistle, might be written "tiot-tiot-tio"; it was varied at times by another trisyllabic call, which, unfortunately, I did not take note of at the time. I waited in vain for these birds to show themselves, but, scenting danger, they kept well concealed. One of them, however, appeared twice, flying up to perch on a grass-stalk, but diving down again before I could put up my gun. It was a *Pomatorhinus erythrocnemis*. Another bird of the same tribe was calling close to me, the cry having almost a human sound, something like "cock-kee," uttered in a shrill loud tone. This place being quite hopeless, I went down the valley towards one of the well-wooded conical hillocks. This hill had a fairly sparse undergrowth of bushes of various kinds under the trees, and was sufficiently easy walking, but there were few birds about. However, a party of *Alcippe brunnea* was diligently hunting about under the bushes. They were very tame—too tame, in fact—as it was difficult to get a specimen without blowing it to pieces. The birds shot were, besides, in moult. On reaching the top of the hill I disturbed a magnificent Crested Eagle (*Spizaëtus nipalensis*?), which sailed off slowly to perch some hundred yards away on a tall tree commanding the wood. In an ill-advised attempt to get near the bird, I managed to lose myself in the jungle, coming out in the valley in a sorry condition after half an hour's struggle with thorns, and creeping and climbing plants, which twisted round me and refused to let go. But worst of all were the prickly bamboos, with their little hooks at every joint, which tore my clothes to shreds. It had begun to be so hot that the hills, eagle and all, were given up for that day and I went straight home.

It was terribly hot all day, and we were obliged to keep to the house. To pass the time I skinned some birds, assisted by my coolie. A man brought me a *Trochalopteron taivanum*, a *Motacilla taivana*, of which there are great numbers in the rice-fields, and a *Buchanga atra* in moult. The moulting-season seems very late here, and some birds apparently go on breeding until late in the autumn, for many of the birds I procured on this trip were still in full moult, and nestlings of *Munia topela*, barely able to fly, were brought to me several times. I noticed but few cage-birds in this locality; Munias and a *Trochalopteron taivanum* were the only species kept by the natives. A live Kestrel (*Falco tinnunculus*), evidently just caught, was brought to me for sale. Late in the afternoon I procured a male *Myiagra azurea*.

On the 6th I again ventured up the hills, setting off at daybreak. Bain took another direction, as before. This time my guide took me up the mountains immediately behind the village. The result was little better than that of the previous day, and sword-grass jungle, Munias, and Grass-Warblers (not recognized) were about all that I saw at first. I heard the large *Pomatorhinus* and Partridges calling. A stiff climb up the steep path that leads to Kamana brought us to the top of the range. Doves, which I was anxious to get, were cooing in some ravines inaccessible from below, and, despite the remonstrances of the native, I attempted to get at them from above by walking through the grass jungle on the brow of the hill. After a lot of trouble I only succeeded in shooting a pretty little Hawk (*Accipiter virgatus*), but a climb down the least precipitous part of the hill brought us to some gullies, where I got one of the Doves, which was, after all, only *Turtur rupicola*. A visit to one or two of the adjacent wooded hillocks only produced a *Myiagra azurea* and a *Zosterops simplex*. There were also a few other birds about, among them *Alcippe morrisonia*, busily hunting for insects along the boughs of the trees overhead, which I did not care to shoot. I went home very early, as we had to be off that afternoon. It was again very hot, just as on the previous day.

Several shooting-men turned up in the forenoon with birds, some of them very interesting to a new comer; a fine female Sparrow-Hawk (*Accipiter virgatus*), *Spizixus cinereicapillus* (in full moult), *Hypsipetes nigerrimus*, *Pomatorhinus musicus*, *Sibia auricularis*, *Stachyridopsis ruficeps*, *Iyngipicus scintilliceps*, and a specimen of the small Formosan hare. I was thus kept busy all the forenoon, working hard with my servant at the captures brought in by the natives, who evidently knew where to look for birds. These men, delighted at the price paid for the birds, eagerly inquired every time they came in how much longer we were going to stay, and would set off immediately on a new search, to return with perhaps one or two interesting birds. Had I had any time to spend here it would have been easy to obtain specimens of many species.

We left Baksa towards 2 P.M., bound for the inn on the Black Mountain, where we were to sleep that night, and reached the place after a hot walk. We met on the way one of the shooting-men, who was waiting for us with a couple more birds, an *Alcedo bengalensis* and a *Hypsipetes nigerrimus*, a young bird just beginning to put on the adult plumage. We also purchased a Partridge from a small boy. I now saw, when too late, that I had made a great mistake in looking for birds on the Baksa side of the valley, where only the lower hills were wooded. The "O Soa"," being nearly all wooded, would have proved a much better locality.

We left the inn very early on the morning of the 7th. I heard many birds on the hills, but, not having time to stop, I only shot a *Pomatorhinus musicus* that was whistling in a hedge near the path. On getting to the glen, mentioned above, where the climbing practically began, I noticed among the stones in the bed of the stream some sea-shells, and picking them up found them to be quite fossilized. I made a rapid search and found quantities of large oysters, two kinds of cockles, one or two bits of madrepores, and a bone of some large animal, and what appeared to be a molar of a large elephant. I hope that some enterprising palæontologist may visit this spot, which cannot fail to produce interesting material.

We had had enough of Kwong-ti-bio the last time we were there, so halted instead at Kuhsia, where we found Bain's ponies, and, after a change of clothes and a rest, we rode off and reached Anping that afternoon.

The birds noticed on the way were—many *Cotile sinensis* (at the sandstone cliffs near the plain), *Motacilla leucopsis*, Sand-Plovers, *Tringoïdes hypoleucus*, a Buzzard, *Myiagra azurea*, and a pair of Mynahs (*Acridotheres cristatellus*) just inside the last hills; these Mynahs were the first noticed in Formosa.

I went down to Takow next day, Nov. 8th. It presents a very different appearance from Anping. The entrance to the harbour is a narrow passage between Apes' Hill and a low bluff called Saracen's Head, which are both of coralline limestone, and were probably separated at no very distant date by an earthquake. Apes' Hill is 1110 feet above the sea; it is a long, bare hill, with an undulating plateau on its S. and E. aspects. The lagoon is bounded on the N. and N.E. by low mangrove-swamps, beyond which are Chimkim, where the Catholic missionaries have a church and mission-house, and, further up the lagoon, the village of Ling-a-liao. The lagoon extends some seven miles to the south, and is separated from the sea by a low sand-spit connected with the bluff.

Most of the 9th of November was spent in obtaining information about Bangkimtsing, a village some 25 miles E. of Takow, which I had been recommended to visit.

November 10th. Fine, not too hot. I left towards 6 A.M. in the boat Father Giner had sent to take me across the lagoon to Chimkim. I saw, flying over the marshes, a pair of striped Harriers (*Circus spilonotus*) and two Spoonbills, and past Chimkim I noticed a few Crested Mynahs. The road from Chimkim to Bangkimtsing leads through an entirely flat country, some low hills bounding the horizon on the N. and S.W. Rice is the chief crop near Takow, but there are also fields of sugar-cane, sweet potatoes, and ground-nuts; and just outside Pithan, a market-town six miles from Takow, there were some market-gardens. Beyond Pithan there seems to be more sugar, and the country began to get more and more arid, till we reached a wild sandy waste, scantily covered with long, coarse grass, which was now quite dry and burnt up by the summer heat. So far as I could make out, this desert extends on the N. to the low hills, offshoots of the higher ranges, and on the S. to the neighbourhood of the sea. We went through this waste land for may be an hour, and then reached the Tangkang River. Its sandy and shallow bed is, at this season, merely a wide stretch of black sand, divided by several streams, all easily fordable, except the farthest one, which we crossed on a large bamboo raft. Towards 2 P.M. we halted at another large village called Bantam, to which a few brick houses gave a look of importance. Some natives told me it was two "pu" (six miles) from Bangkimtsing; others said three "pu." I am inclined to think it is more than ten miles. Another river which we had to cross proved very treacherous, as there were numerous quicksands in it. We experienced some difficulty in getting across, the carriers not knowing the way over, and my baggage narrowly escaped a wetting. From this river to the mountains the country was a vast rice-field, divided off at intervals by stretches of bamboo-grove surrounding villages. At 6 P.M. we reached our destination.

Bangkimtsing lies at a distance of a mile and a half from the mountains. It is a pretty village, and, like the other hamlets on the plain, is traversed by wide sandy roads. I proceeded at once to the Catholic Mission, where Father Colomer put a large room at my disposal. After dinner I engaged a man to take me up the mountains next morning.

November 11*th.* Fine, cool breeze, hot sun. My guide arrived punctually towards dawn, and we started for the nearest hills. These form a small range, the highest hill of which, called Capiang by the villagers, attains a height of perhaps 2000 feet. The slopes facing the plain are nearly denuded of timber, except in some few favoured spots, but thick woods clothe the inner slopes from top to base. A fine gorge, enclosed on one side by this first range, runs nearly parallel to the plain for some distance, and then turns off to the E., apparently leading to the high mountains. The hills in this part of Formosa are, I believe, chiefly formed of schists and slate, and the surface of the plain near the hills is covered with slaty stones. I could not reach the forest that day, my guide not having understood where I wanted to go, and being probably afraid to venture too far alone with me. After climbing aimlessly through thick jungle, and neither seeing nor hearing any birds, I went down again, and, following the foot of the hills, reached the opening of the gorge mentioned above, which is some four miles N. of Bangkimtsing. A beautiful stream of clear water flows down the gorge into the plain over a pebbly bed. The outer hills overlooking the stream on its N. bank rise to a height of at least 3000 feet. The forest only appears in patches on their precipitous slopes, while the hills that continue further up the valley seem to be more generally wooded. The inner mountains at the back of Bangkimtsing rise to a good height, 9050 feet according to the Admiralty chart of Formosa. Forest covers them as far as I could see.

Here I made another attempt to ascend the hills, but after proceeding for a short distance up a dry torrent-bed, overshadowed by tall jungle, brushwood and ferns, I had to desist, Ignacio, my guide, telling me that we were in savage territory, where the inhabitants were at war with the Bangkimtsing people, and that there was danger of our being speared by some lurking savage. We then climbed up through the jungle to a flat grassy terrace overlooking the plain. It was now so hot that I had to turn back. We crossed the stony river-bed once more, noticing a few birds (*Ægialitis*, sp., and *Motacilla leucopsis*) among the stones. On the bank of this watercourse, half a mile or so from the hills, the Chinese have a fort to guard the pass.

The Bangkimtsing Pepohwans told me that the savages who live among the mountains along the valley and further E. were on friendly terms with them, but that those in the mountains bordering the plain N. of the valley were hostile. There are two places in the neighbourhood of Bamkimtsing where savages come to trade with the Chinese and others. I had no time to visit them, occupied as I was with collecting and preparing specimens. I procured nothing of interest on the way home, with the exception of a Lark (*Alauda wattersi*); this bird was singing on the ground. On getting back to the village I heard that a party had been out pig-hunting that morning. They had shot a sow, which was brought for my inspection. The wild pigs are extremely abundant on the neighbouring mountains, and come down almost every night to the plain to feed on the crops. They are, however, seldom shot, the natives apparently being but poor shots and their powder very bad.

November 12*th*. To-day being Sunday, there was again no going up to the forest, as this entails a start before daybreak; the heat being still such that the summit of the hills has to be reached before the sun lights up the western slopes. I visited instead a valley some five miles N. of the village. Here are extensive sugar-fields, where Pheasants are said to be numerous. Although Ignacio had a trained native dog with him, and beat the patches of cane assiduously, he failed to put up anything better than a hare and three Quail. One of the latter was probably *Turnix taigoor*. The other two were of the same size as the common Quail, but darker. I shot here a Hwanei (*Trochalopteron taivanum*).

As it was yet early, I strolled along the bank of the stream and went up the valley, hoping to come across some birds. We had not gone very far when I caught sight of some heads peering at us over some boulders in the stream, and on my pointing these out to Ignacio, he said "Hwan-lang" (savages), and immediately gave an unearthly yell, which was answered at once by the savages. Then followed a shouted conversation, and my guide, turning to me, declared these people to be friendly and known to him, and that they were out fishing; so we made our way towards them through tangled jungle, in which wild pigs had lately been feeding, and soon emerged in an open space in the valley at a stone's-throw from two men armed with spears. As we signalled to them to approach four more appeared. They all joined us at once, and while they were talking with Ignacio, eagerly inspected the contents of the bag he carried. Three of the party were armed with long bamboo spears with iron heads; one of these was arrow-shaped, and had, besides, a hook below the barb, a most murderous-looking weapon; the other two spears had three feathers dangling below the oblong head. The fourth man was armed with the ordinary percussion-gun in use among the Pepohwans. These have a foreign-shaped stock; the barrel is long and tapering, bound to the stock with strips of brass, the stock extending to the muzzle. At my request the man drew the charge for me to look at. The projectiles were three roughly rounded bullets of about the size of an S.S.G. shot. They were destined for a pig or deer, or may be a Chinaman, as the opportunity might occur. All the men carry, besides their gun or spear, a large, broad-bladed cutlass with wooden handle; this knife is secured by metal bands to a thin board, which thus serves as a scabbard. The Pepohwans have also these weapons, using them for various domestic purposes. Two young boys made up the party. The men were short, but good-looking, with large eyes and delicate features. They behaved very civilly, but were eager to get any cartridges from me, rejecting with scorn the empty cases I offered them. After more talk, they left, saying that they were going home to dinner. As I was leaving the place I put up a "Crow-Pheasant" (*Centropus* *bengalensis*) out of the long grass and shot the bird, much to the delight of our new friends.

We went home slowly, carefully searching the base of the hills; but beyond a flock of Grey-headed Mountain Bulbul (*Spizixus cinereicapillus*), that were flying on the hill out of reach, and a small Short-tailed Bush-Warbler (*Herornis squameiceps*), I did not notice any interesting birds. The latter was hopping about from twig to twig, uttering a ticking note, something like that of the *Cettias*.

I made arrangements that evening for a visit to the forest next day, and distributed powder and shot to the hunters who were to accompany me.

November 13*th*. Fine, sky overcast in afternoon. I started before dawn with Ignacio, whose wallet, a strong small-meshed net, was loaded with cartridges, a little rice and tea for the midday meal, and the usual collecting paraphernalia. Two of the hunters followed, and on getting to the foot of the Capiang Hill we were joined by the two others. We had a stiff climb to the forest; there is only grass or low jungle on the slope, except in some ravines, where the devastating Chinaman has allowed the trees to grow undisturbed. We saw a couple of *Dendrocitta formosæ* near the summit of the hill, and these were the only birds identified, whatever birds there were remaining securely hidden in the jungle and long grass.

After picking our way through the sword-grass jungle which skirts the forest along the crest of the hill, we entered the woods, and climbing over fallen trees, pushing over giant ferns, or struggling through a varied undergrowth, we went down the mountain. The ground was carpeted in many places with begonias bearing large pink blossoms. Climbers and creepers of many kinds hung suspended in festoons to the trees, many of them supporting huge bird's-nest ferns, which swung above our heads or found a more secure position in the forks of trees.

In the shady ravines groups of tall tree-ferns raised their graceful crowns nearly to the level of the smaller forest-growth. The moment I had penetrated into the forest I heard many birds in the foliage overhead, and the natives dispersed in search of them. For my part, I could distinguish nothing, and my companions, with their firing, soon frightened off what birds were within reach of me, and as, with one exception, they proved to be infamously bad marksmen, I found them of little use. However, after many shots, they brought down a *Sibia auricularis*, a forest-bird which seems to be very common here, flying in small flocks among the tree-tops.

A narrow forest-path, which wound round the hill, afforded me good walking for a time. While following this a pretty dark-blue bird (*Notodela montium*) flitting among the underwood was secured; but I saw nothing else, and my Pepohwan friends, who had seemed, from the fusillade higher up in the woods, to be having good sport, contributed but little to the bag; for, when we had met at noon to rest and eat our rice, their only captures were another *Sibia auricularis*, a squirrel with red underparts, and a large tree-frog.

The spot chosen as resting-place was on the bank of a little rivulet, which had here formed a tiny pool, overshadowed on the other side by tall trees. Fresh traces of a fire showed that savages had recently been here, and, in fact, the place where I had met the aborigines yesterday was just below us.

We now retraced our steps, and at last I began to meet with a few birds. Parties of *Alcippe morrisonia* were chattering in the thickets, several *Sibia auricularis* were passing overhead flying from tree to tree, a couple more of the Blue Warbler (*Notodela montium*) were shot in the underwood, and as I was standing still, listening and waiting for something to come along, a Barbet (*Cyanops nuchalis*) came and perched on a tree close by. I shot it, and presently secured another at the same spot. A flock of Black Mountain-Bulbul (*Hypsipetes nigerrimus*) flew by, as well as other birds which I did not recognize. My hunters also shot a few birds, among which were a pretty Minivet (*Pericrocotus griseigularis*), a Formosan Tree-Pie (*Dendrocitta formosæ*), and a *Liocichla steeri*. We heard the Formosan Long-tailed Jay

(*Urocissa cærulea*), a bird which seems rather rare here, but the hunters, who had gone after them, could not shoot one, and though, on their subsequent visits to the forest, they occasionally met with them, they were unable to get me a specimen. On coming to an open space on the mountain-side we had a splendid view of the hills and valley. On our left, across the gorge, were the hills called "Kawasan" by the natives, which had mostly but a growth of jungle covering them, though here and there forest showed in dark patches. Beyond, in the E., were the high mountains, almost virgin country, trodden only by the savages who inhabit them. Beautiful butterflies kept flying past, and once a pretty Tit, with bright yellow underparts and black median line (*Parus insperatus*?), came out of the jungle on the other side of a gully and remained gazing at us till frightened away by a shot.

I saw no birds on our way back to the top of the hill. It was tiring and rough walking, mostly through thick scrub, with an occasional climb over a fallen tree. Once back on the W. slope, the return journey was easy enough. An *Emberiza spodocephala,* which I brought down as it flew overhead, was the only bird identified on the way down. We reached home before dark, meeting many peasants, either coming back from the hills, where they had been cutting grass, or wending their way home with their buffaloes from the rice-fields. The fact that the peasants go to their work on the hills, or in the fields near them, armed with gun or spear, is suggestive of the unsettled condition of affairs on this borderland. Fear of the savages, even of those with whom they are on friendly terms, seems predominant in the mind of the Bangkimtsing natives. As a rule, hunters will not go shooting on the hills except in parties of three or four individuals.

November 14*th*. Fine. Day spent in preparing birds and other specimens shot yesterday. Some hunters who had gone out for me brought back a few birds: *Pericrocotus griseigularis, Hyps. nigerrimus*, a young *Cyanops nuchalis, Dendr. formosæ*, a fine male *Calliope kamschatkensis*, and some other common birds. Ignacio, who went out with them, caught a pretty little Quail (*Excalfactoria chinensis*).

November 15th. Dull, showers. I went up Capiang Hill before daybreak. This time Ignacio alone accompanied me. While toiling up the mountain we caught a glimpse of a large bird, which was, I believe, a *Spizaëtus*, as he rose out of a gully and disappeared over a ridge. In the brushwood on the lower part of the hills I saw a few *Troch. taivanum* and *Pom. musicus*, and towards the top heard the Tree-Pie (*Dendrocitta formosæ*). The direction we took was much the same as that pursued on the 13th. We went over the crest of the hill among the woods, meeting at first little success. I saw several birds, however, which I did not recognize and was unable to shoot; then, after I had reached a rather more open part of the forest, I heard two birds calling to each other with a peculiar whistle. Ignacio now told me that this was the call of a bird known to him; he had fired at and wounded one the day before, but had failed to secure it. The description he gave of it was almost that of *Pitta oreas*, so I remained still for a long time, answering the call; but all in vain, as nothing came along. I subsequently offered a reward for a specimen, but none were ever brought to me.

My first capture was again a *Notodela montium*, just finishing its moult. Lower down a flock of Minivets (*Pericrocotus griseigularis*) settled with loud screams on the trees overhead. A couple of Black Drongos (*Buchanga atra*) were after them, contributing more than their share to the uproar. I shot two of the Minivets, both of them green-and-yellow birds. A small orchid, with an insignificant little green flower, was abundant here, growing on the large creepers; it is the only orchid I noticed in these woods. A kind of cinnamon also occurs, the bark of the long trailing roots being the part used as spice. My guide told me that it was used for perfuming native tobacco. Near the spot where we had rested on the 13th we struck a native path which led straight uphill. My companion was unwilling to follow it, saying that it led to a village of the aborigines, but, after a little pressing, he consented to go on as far as the top of the hill. As I expected, the walk was most interesting; the path was wide and well kept; every now and then we came to a level open space, where the savages had been camping or cutting wood. Resting at one of the clearings, we ate our midday rice, seated on billets of wood left by the natives. The melancholy call ("too-too-too-too-lo-too-leeoo") of a Barbet high up on the mountain, and the scream of a bird of prey, which Ignacio said was that of the *Spizaëtus*, were the only sounds to be heard till the calm was broken by a swish of wings and a loud twittering and screaming, announcing the arrival of a flock of Black Bulbuls (*Hypsipetes nigerrimus*) on the neighbouring trees. When they had gone a Tree-Pie was observed hunting for insects or fruit on a tree close by, silently inspecting the foliage, to which it hung in the fashion of a Tit. A short way further up I had the good fortune to secure a fine adult male Barbet (*Cyanops nuchalis*), as it sat motionless on a branch, with its tail comically perked up. In a part of the forest free from thick undergrowth I shot a small bird which had alighted in front of me under the shelter of a large fern; this was a specimen of the pretty little *Horornis squameiceps*.

We passed by an old pitfall dug by the savages; a young tree that grew from its centre must have been originally the stake planted there to kill the trapped game. Now, to improve matters, it began to rain. It was quite dark when, tired and wet through, we reached the Mission. We had walked twelve hours.

Some men brought in during the evening a few birds: *Motacilla leucopsis* in full breeding-dress, *Alauda wattersi*, a lovely male *Myiagra azurea*, *Pomatorhinus musicus*, and others. I also purchased a young *Turnix taigoor*, which I afterwards took to Amoy.

November 16th. Fine, rain later. Skinned birds till 3 P.M., then went out for a stroll about the village. Shot *Cettia minuta*, *C. canturiens*, *Pom. musicus*, which are common in the bamboo-edges. Others found in similar places are *Zosterops simplex*, *Pycnonotus sinensis*, *Oriolus diffusus*, *Buchanga atra*, and, in the fields, numbers of *Motacilla tairana*, *Anthus* *cervinus*, &c. The hunters, who had gone out again, brought, besides birds already obtained, a female *Turdus albiceps*, with head in moult. The man who shot this told me that there was a flock of six or seven, and that he noticed the white heads of the males. They had also *Alcippe morrisonia*, *Cettia canturiens*, and a *Spizixus cinereiceps* in good plumage, except that several of the tail-feathers were only a third grown.

November 17*th*. Fine. Out at dawn, with two hunters and Ignacio, who were followed by two trained native dogs. They beat the patches of sugar-cane in the plain ineffectually, and we only saw one Pheasant, which was flushed out of a field of ground-nuts when least expected. I shot a couple of Quail (*Turnix taigoor*). Large numbers of Doves were on the plain—*Turtur chinensis* and another, probably *T. rupicola*,—which had come down from the hills for a morning feed. In beating the brushwood about the foot of Capiang Hill we put up a covey of Bamboo Partridges (*Bambusicola sonorivox*), one of which I shot, and we also secured a little Scops Owl. This bird, being only winged, I brought back to Takow, but after being tended with great care, to my disappointment, it escaped. It was probably *Scops hambroecki*. Iris yellow; plumage suffused with rusty red; underparts unspotted; tarsi distinctly rufous and feathered to within ⅓ inch of the foot. Size very small, probably 19–20 centimetres.

One of the hunters unfortunately missed a Green Pigeon (*sp. inc.*) a short way up the hill, which mishap much annoyed me, as I was anxious to get one of these birds, and hitherto had not even seen one.

I was back at noon and spent the rest of the day preparing birds. With a few common birds was brought in a female Redstart (*Ruticilla aurorea*). Made my preparations to leave Bangkimtsing early next morning, without much regret, as the locality had hardly come up to my expectations. The distance from the forest is too great to make Bangkimtsing a good centre. The villagers, too, though they know the country well, are of little use as collectors. In order to work this part of Formosa successfully it would be absolutely necessary to stay altogether in the mountains. For this the goodwill and assistance of the savages is indispensable, and the collector would probably have to leave his Chinese assistant or servant behind and live in the savages' villages.

November 18th. Fine, cooler. The chair-bearers and carriers were punctual, and we left at 6 A.M. I walked to the first river. Amongst other birds I saw a good many Golden Plovers (*Charadrius fulvus*) and several Snipes. A few Striped Harriers (*Circus spilonotus*) were quartering the rice-fields, and I saw two other Harriers, which I took to be *C. æruginosus*, but they had apparently pure white heads and shoulders. On looking over the descriptions I have of this species, I find no mention of the white shoulder, nor do I remember this feature in the many Marsh-Harriers which I collected in China, so I came to the conclusion that these birds were of some species unknown to me. ["The Marsh-Harrier has not unfrequently, in imperfectly adult plumage, a patch of the same *yellowish* white on the 'shoulder' as on the crown, which seems to point to Mr. de La Touche's first idea as correct."—H. H. S.]

Nothing of interest was observed during the rest of the return journey, except a pair of Crested Mynahs, perched, in company with a crowd of Black Drongos, on some high bamboos. I remained several days at Takow before returning to Amoy, but did little in the way of bird-collecting; the neighbourhood has been so thoroughly worked by Swinhoe that nothing remains to be done. On one day I went with Frère Giner to visit a lake and some marshes where Ducks were said to be plentiful. At a narrow sedgy marsh, some two miles from Chimkim, we found many Snipes. Leaving this, we made our way across paddy-fields to a low range of hills, called the Pineapple Hills, N.E. of Takow. We saw on the plain *Circus spilonotus*, *Cisticola sp. inc.*, many Golden Plovers, *Anthus cervinus*, *Motacilla taivana*, *Buchanga atra*, &c. The lake is surrounded by low hills, a belt of high bamboos on its northern shore, on the S. a village, with fine banyans overshadowing the water. A large flock of ducks (*Fuligula cristata*?) were resting on the water. They were quite unapproachable : we pursued them in "tekpai" (bamboo rafts)—a most inconvenient kind of craft for this work—but gave it up in disgust. The water at the lake-edge was covered with a wide band of *Limnanthemum indicum*, a pretty water-plant with broad flat leaves and a small fluffy white flower. Several Jacanas (*Hydrophasianus chirurgus*) were walking over the leaves, and, with a Night Heron, shot by Fr. Giner, were the only other birds we saw. The only other birds of interest noticed near Takow during the rest of my stay were Red-rumped Swallows, Swifts (*Cypselus subfurcatus*), and two large Grey Wagtails with white wings, the primaries just tipped with black, no doubt *Motacilla lugens*.

I crossed the channel on the night of the 30th November, and reached Amoy next morning.

II.—*Narrative of the Expedition of* 1894.

At the beginning of February 1894, the Revenue cruiser being in port, bound for the Pescadores Islands and the S. coast of Formosa, I obtained leave of absence and left Amoy on Feb. 8th. It blew so hard that we did not cross till the 10th, and anchored that afternoon before Fisher Island. Numbers of Albatrosses (*Diomedea albatrus*), adult and dark-brown birds, probably the young of this species, were seen during the day, some coming quite close to the ship. About Fisher Island they absolutely swarmed. The Pescadores are so well known that a description is unnecessary. They are all more or less flat-topped. Fisher Island (the only island we visited) is perfectly bare of trees. The flat plateaux and intervening valleys are all cultivated, ground-nuts, sweet potatoes, and millet being the crops. The soil is reddish and sandy, and the rock-formation columnar basalt. I saw few kinds of birds. Rock-Thrushes (*Monticola solitarius*) were rather common; Golden Plovers (*Charadrius fulvus*) were in flocks on the plateau near the lightship; Larks (*Alauda wattersi*) were common and were very tame. I shot a couple for specimens, and was surprised to find the plumage strongly tinged with reddish ochre, thus presenting a strong contrast to the birds obtained in Formosa, which have little, if any, rufescence on the upper parts. As the plateaux of the Pescadores are at this season quite bare of vegetation, there is no protection for any field-birds from the birds of prey; this would seem to be remedied by the birds putting on (in winter?) a reddish plumage, which makes them almost invisible when crouching on the shallow ridges of the fields. These three species, with the ubiquitous Sparrow, were all the birds we noticed on this occasion.

We left the Pescadores next morning, Feb. 11th, and by noon were in sight of Formosa. The great plain which extends along the west coast, and stretches across to the feet of the central chain of mountains, terminates about 40 miles from the S. of Formosa. Thence to the South Cape the mountains rise very near the sea-shore. Rounding the flat-topped S.W. cape, enclosing one side of Kualiang Bay, we saw ahead the lighthouse standing on the South Cape, which is also a flat-topped headland of coralline limestone. A coral-reef surrounds the cape, but boats can reach a jetty, erected by the lighthouse authorities, through an artificial passage. There we landed, and while the lighthouse-stores were being landed I went for a walk in the jungle, which reaches down to the beach. A shady path led inland, and, tempted to explore it, I started in pursuit of a Bulbul whose unfamiliar call had attracted my attention at once on landing. I suspected it to be Mr. Styan's recently described *Pycnonotus taivanus* (Ibis, 1893, p. 470), but it was shy, and I was unable to ascertain for certain. I made my way up to the cliff, which is clothed with luxuriant vegetation. The Bulbuls were calling in every direction, as were also *Troch. taivanum*, *Pomat. musicus*, *Oriolus diffusus*, and other birds. Near the foot of the cliff I flushed a Button Quail (*Turnix taigoor*?), and a few yards further on a Dove, with barred lower back (*Chalcophaps indica*?), flew rapidly by, and was gone before I could get my gun up. I made my way through open grassy ground to the flat plateau above the lighthouse, which was covered with a low jungle of pandani and some good-sized date-palms. Here the Bulbuls were abundant, flying in twos and threes from one date-palm to another, but so shy as to be unapproachable. They were very vociferous; the call is louder and more mellow than that of *Pycn. sinensis*, and, but for the call and the black cap, they might easily be mistaken for that species. I walked on till I reached the outer edge of the promontory facing the Pacific, then made my way to the lighthouse through the tangled pandanus scrub. At last I had the chance to shoot a Bulbul, and it was, as I expected, Mr. Styan's new bird. I saw also two black birds, probably *Hypsipetes nigerrimus*, and a Thrush (*sp. inc.*). There was a fine Swinhoe's Pheasant (*Euplocamus swinhoii*) at the lighthouse, and also some green Doves (*Chalcophaps indica*), the latter destined for Amoy. We returned to the jetty by a fine wide road. It had been very hot during our stay ashore, the heat being all the more noticeable as we had left Amoy in mid-winter. This calm muggy weather soon changed, however, for a stiff north-easter came down in the evening, and it blew hard in the night, with heavy showers of rain. Next morning (the 12th) the weather was still bad. I went ashore in the first boat, towards 6 A.M. There were few birds in the jungle round the cape. I saw *Hyps. nigerrimus*, heard Bamboo Partridges (*Bambusicola sonorivox*), and shot a *Pomat. musicus*. While wandering about the foot of the cliff I came upon a Crested Eagle perched on a large bare tree (the third example I had seen in Formosa), but failed to secure it. Styan's Bulbul was abundant, though wild, and flew about in small flocks of five or six. I managed to get another. Orioles were common, also a brown Thrush, with a Blackbird-like note of alarm (*Turdus pallidus*?), and a black bird with white head, seen flying into the jungle, was, I presume, *Turdus albiceps*. Towards 10 o'clock we embarked, taking with us the lighthouse-keeper. Mr. Wilnau, the present keeper, is a zealous collector for the Copenhagen Museum, and is likely to make many interesting discoveries, as the locality is an almost unknown and very promising one. We left at 11 A.M. for Takow, and next day (Feb. 13th) the latter for the Pescadores. Waiting there for fine weather to cross to Amoy, some of us landed on Fisher Island. A couple more Larks and a pair of Rock-Thrushes (*Mont. solitarius*) were shot, also a Golden Plover and some Sand-Plovers (*Æg. cantianus*). I saw a Peregrine Falcon, and (I believe) a Kestrel. The only green stuff noticed was a hedge or two of *Euphorbia*, a tamarisk, and a few fruit-trees in a village. On the 15th we reached Amoy at 4 P.M.

The following is a list of the birds observed or obtained in S. Formosa and the Pescadores during my two trips. I am much indebted to Mr. C. B. Rickett for identifying several of the birds collected, and to the Rev. H. H. Slater for identifying several others and for revising these notes. My best thanks are also due to the communities of Anping and Takow, and in particular to my amiable hosts Messrs. Bain and Macgowan, and to Dr. Myers and Mr. F. Cass of Amoy, for their hospitality and many kindnesses in connection with my visit to Formosa.

III.—*List of the Birds obtained, with Remarks.*

1. MERULA PALLIDA.

South Cape.

2. MERULA ALBICEPS.

Bangkimtsing (forest). South Cape?

3. SIBIA AURICULARIS.

Baksa, Bangkimtsing (forest).

Stomach of one specimen contained flies and what appeared to be the remains of a berry. Most of the specimens shot were moulting.

Bangkimtsing name "Soaⁿ Lau ba."

4. POMATORHINUS MUSICUS.

Baksa, Bangkimtsing (village and lower hills), South Cape, and plain generally. Most of the November specimens are partly in moult.

Stomach of one specimen contained seeds and remains of insects.

Baksa name "Kok kong mai." Bangkimtsing name "Hoe-bi ku."

5. Pomatorhinus erythrocnemis.

Common at Baksa, but not heard at Bangkimtsing. It frequents jungle and brushwood on the hillsides.

Baksa name "Kok kong mai."

6. Trochalopteron taivanum.

Abundant everywhere on the plain and lower hills.

Stomach of one specimen contained beans or berries, remains of insects, and gravel.

Native name "Hoe bi."

7. Monticola solitarius.

Baksa valley and Bangkimtsing. Extremely abundant at Takow; Fisher Island (Pescadores).

Bangkimtsing name "Phu khit."

8. Ruticilla aurorea.

Bangkimtsing, Takow.

9. Calliope kamschatkensis.

♂. Bangkimtsing.

10. Notodela montium.

This bird frequents the underwood in the forest on Capiang Hill, Bangkimtsing, alt. 1300 ft. to 2000 ft. It is active and rather shy, somewhat resembling in its ways the Blue-tailed Warbler (*Tarsiger cyanurus*). I never saw more than one at a time, and did not see any females. One specimen (15th Nov.) was just finishing its moult.

Stomach of one bird contained remains of a caterpillar.

11. Prinia sonitans.

I believe that I heard this bird in the Baksa valley.

12. Prinia inornata.

Common. One of two shot on Apes' Hill, Takow, has the tail-feathers still in the shaft.

13. Cisticola, sp. inc.

Takow plain.

14. Cettia (Horornis) squamiceps.

Bangkimtsing (forest and valley).

15. **Cettia cantuHiens.**

16. **Cettia cantans minuta.**

Both common in bamboo-hedges about Bangkimtsing village.

17. **Liocichla steerii**, Swinhoe, Ibis, 1877, p. 474, pl. xiv.

One female shot in forest on Capiang Hill, Bangkimtsing.

Stomach contained remains of berries. Colour of soft parts as follows:—*iris* reddish brown; *bill* dark greyish purple; *legs* reddish grey.

18. **Alcippe morrisonia.**

Common on the Baksa hills and in forest on Capiang Hill, Bangkimtsing.

Stomach of one specimen contained seeds and berries.

19. **Alcippe brunnea.**

Common in Baksa valley. One specimen from forest on Capiang Hill.

Most of the specimens procured were moulting.

Contents of stomach in one case were caterpillars, remains of insects, and green stuff; in another, remains of insects and seeds.

20. **Stachyridopsis ruficeps.**

♂. Baksa.

21. **Parus insperatus?**

Forest on Capiang Hill, Bangkimtsing.

22. **Motacilla lugens?**

Takow.

23. **Motacilla leucopsis.**

Very common all over the lowlands and in the valleys. I saw many in apparently full breeding-plumage during November.

24. **Motacilla taivana.**

Abundant on the plain, in valleys, and on Apes' Hill, Takow.

25. **Calobates melanope.**

Fairly common on mountain-streams.

26. **ANTHUS CERVINUS.**
Abundant on the plain.

27. **ANTHUS RICHARDI ?**
Apes' Hill, Takow.

28. **HYPSIPETES NIGERRIMUS.**
Baksa, Bangkimtsing (forest), and South Cape.
Stomach of one bird contained the remains of a berry.
Bangkimtsing name "Soa^{n} O chhiu."

29. **PYCNONOTUS SINENSIS.**
Abundant on plains and lower hills; replaced at South Cape by the following species.
Native name "Pa thau kok."

30. **PYCNONOTUS TAIVANUS**, Styan, Ibis, 1893, p. 470; 1894, p. 337, pl. ix.
South Cape.

One of my two specimens measures 203 mm. *Iris* dark red; *bill* and *legs* black. In describing this species Mr. Styan omitted to mention the yellow vent.

The South Cape is evidently the locality whence Mr. Styan's bird was procured. As noted above, *P. taivanus* is abundant there, but is very wild. I did not see this species at Baksa, Bangkimtsing, or about the ports of Anping and Takow, so it is probably confined to the hilly country in the southern extremity of the island; it is possible, however, that it may stray along the east coast.

In connection with the rather restricted range of this Bulbul, it is interesting to read that the southernmost part of Formosa was originally a coral island*.

31. **SPIZIXUS CINEREICEPS.**
Specimens in moult procured at Baksa and Bangkimtsing.

32. **ORIOLUS DIFFUSUS.**
Common at Baksa, Bangkimtsing, and South Cape.
Native name "Ng yéng."

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* See a paper on the Geology of South Formosa, by George Kleinwächter, Journal N. C. B. of Royal Asiatic Society, 1883.

33. BUCHANGA ATRA.

One of the most striking features of the bird-life of South Formosa, as compared with that of the opposite mainland, is the abundance of the Black Drongos. These birds are found everywhere, and in the plain take up the part played by the Crested Mynah (*Acrid. cristatellus*) in South China. Like the Mynahs, they attend cattle in the fields, using in the marshes the back of these animals as a perch. Near the sea they develop aquatic tastes, for I saw one, one day, pouncing on fish in a creek. The stomach of a specimen shot at Anping contained water-beetles and the head of a small fish. Further inland they are abundantly distributed over the flat country, valleys, and lower hills, and I even saw them on the top of Capiang Hill (alt. about 2000 ft.). On the coast of Fukien and about Swatow, where the Mynahs are so abundant, they are uncommon.

The native name is "O chhiu."

34. PERICROCOTUS GRISEIGULARIS.

Common in the forest on Capiang Hill, Bangkimtsing.

Stomach of a specimen contained flies.

35. LANIUS SCHACH.

Common on lowlands.

Bangkimtsing names "Lau ba" and "Pit lo chiau."

36. LANIUS LUCIONENSIS.

One young bird shot at Baksa. I noted at Takow small brown Shrikes, which were probably of this species.

37. MYIAGRA AZUREA.

Abundant on the lowlands and at Baksa (hills and valley). Frequents bamboo-jungle &c. on lower hills and bamboo-hedges in villages. Not noticed in forest. Its cry and ways remind one of the Paradise Flycatchers, *Tchitrea incii* and *T. princeps*.

38. HIRUNDO GUTTURALIS.

Seen on the plain.

39. HIRUNDO NIPALENSIS ?

Many were seen at Takow and Bangkimtsing, but not obtained.

40. Cotile sinensis.

Seen flying about sandstone cliffs on the way to Baksa, and also at Takow.

41. Munia topela.

Abundant everywhere. Seems to breed till late in autumn.

42. Munia acuticauda.

Abundant.

43. Munia formosana.

Seen on grassy hillsides at Baksa.

44. Emberiza spodocephala.

Bangkimtsing, Takow, and South Cape.

45. Passer montanus.

46. Alauda wattersi.

Common in the plains of South Formosa in grassy places and on the plateaux on Fisher Island, Pescadores. Legs are flesh-coloured, with darker joints. Testes in two Formosan specimens were well developed.

There seems to be no appreciable difference in the size of Formosan and Pescadorian specimens, but the difference in colour is very marked, the reddest of the Formosan birds (three) being far removed from the darkest of the Pescadorian birds (four).

47. Sturnia sinensis.

Bangkimtsing.

Bangkimtsing name "Kho lieng ku."

48. Acridotheres cristatellus.

The Crested Mynahs are very uncommon in the plains east of Taiwanfu and Takow. They are rather more often seen about Takow. It would seem as if they had been imported by the Chinese in years gone by.

Native name "Ka ling."

49. Pica caudata.

Native name "Kheh chian."

50. Urocissa cærulea.

Heard in forest on Capiang Hill, Bangkimtsing. They seem to be very shy.

51. Dendrocitta formosæ.

Common in forest, Bangkimtsing. Stomach of a specimen contained fruit, beetles and other insects.

Bangkimtsing name "Soa^{n} kheh chian."

52. Cypselus subfurcatus.

Seen on Apes' Hill, Takow.

53. Iyngipicus scintilliceps.

One male, shot by a native at Baksa. I did not meet with any Woodpeckers during my stay south in Formosa.

54. Alcedo bengalensis.

Abundant.

Bangkimtsing name "Tio hi ang."

55. Centropus bengalensis.

♂. Bangkimtsing.

Stomach contained grasshoppers.

Bangkimtsing name "Bang khieng."

56. Cyanops nuchalis.

Of four specimens procured at Bangkimtsing, one adult male has a conspicuous nuchal patch, another male has very slight traces of it, and a female has it fairly well marked. The patch is not apparent on a young bird, probably not many weeks out of the nest.

Stomach of one specimen contained leaves, and that of another fruit.

57. Scops hambroecki.

Shot at foot of hills near Bangkimtsing.

Bangkimtsing name "Nian than chian." This name, so the natives told me, is also given to the large Owls.

[From the description on page 325, this seems to be *S. hambroecki*.—H. H. S.]

58. SCOPS PENNATUS.

♀. Bangkimtsing. Bought from a native. *Iris* yellow.

Bangkimtsing name "Phu chian." It is strange that the natives should distinguish between these two species of *Scops*, but this seems certainly to be the case.

59. CIRCUS, sp. inc.

I do not know to what species the Harriers seen on the return journey from Bangkimtsing should be referred. They may be roughly described as having a white head, a white shoulder-patch, and general colour brown.

[Doubtless *C. æruginosus.*—H. H. S.]

60. CIRCUS SPILONOTUS.

Common on the plain.

61. SPIZAËTUS NIPALENSIS?

Crested Eagle seen at Baksa, Bangkimtsing, and South Cape.

62. ACCIPITER VIRGATUS.

♂ ♀. Baksa.

The stomach of the female contained insects. Other Sparrow-Hawks, probably of the same species, were seen at Baksa.

63. FALCO TINNUNCULUS.

Common.

64. MILVUS MELANOTIS.

Common.

Native name "La hioh."

65. PHALACROCORAX, sp. inc.

We twice saw a Cormorant flying overhead, when climbing the hills at Bangkimtsing.

66. CHALCOPHAPS INDICA.

South Cape.

Mr. Arthur, of Messrs. Bain & Co., Anping, very kindly sent me a live example from Anping. "Provenance" of bird unknown.

The Bangkimtsing natives seemed to be well acquainted with some kind of green Pigeon which they call "Kim ka tsui" (golden or metallic Pigeon; but I was not able to procure a specimen, and am still unable to state what kind or kinds of green Doves are to be found in that neighbourhood.

67. TURTUR CHINENSIS.

Abundant on the plain. Occurs sometimes in very large flocks.

Native name "Ka tsui."

68. TURTUR RUPICOLA.

Common on the hills.

Native names "Pang ka" and "Ka tsui."

69. EXCALFACTORIA CHINENSIS.

A male caught alive at Bangkimtsing (lower hills).

70. TURNIX TAIGOOR.

Common at Bangkimtsing.

71. BAMBUSICOLA SONORIVOX.

Abundant on Baksa hills, Bangkimtsing, and South Cape.

Native name "Ti ke."

72. PHASIANUS FORMOSANUS.

I saw *one* Pheasant at Bangkimtsing and none at Baksa. However, sportsmen have told me that there is excellent Pheasant-shooting not far north of Bangkimtsing.

Native name "Ti ke."

73. EUPLOCAMUS SWINHOII.

South Cape.

A very fine live example has been sent to me from Bangkimtsing by Fr. Colomer.

74. HYDROPHASIANUS CHIRURGUS.

Lake near Takow.

N.B.—I paid little or no attention to shore- and other water-birds during my stay in Formosa. I, however, noted the following:—*Ægialitis cantianus, Charadrius fulvus, Totanus hypoleucus, Tot. ochropus, Tot. glareola,* Spoonbills (sp. inc.), Snipes, Coots, Dabchicks, &c.

XXVI.—*Preliminary Descriptions of a new Genus and of five new Species of Central Australian Birds.* By ALFRED J. NORTH, F.L.S., Australian Museum, Sydney.

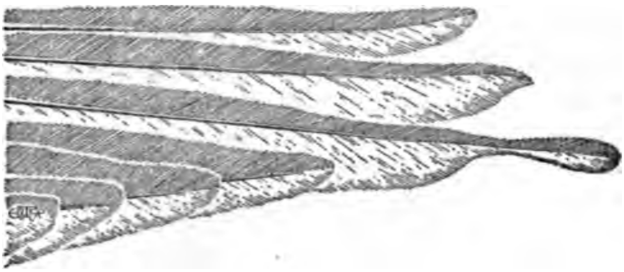
PROFESSOR W. BALDWIN SPENCER, of the University of Melbourne, has kindly sent me for examination a number of bird-skins collected in Central Australia during the visit of the Horn Expedition in May, June, and July of last year. Among them are examples of the rare Parrakeet *Polytelis alexandræ* and of five species new to science.

Full descriptions, together with a list of all the birds procured, and accompanied with field-notes by the collector, Mr. George Arthur Keartland, will be published in a volume detailing the work and results of the expedition.

Order PSITTACI.

SPATHOPTERUS, gen. n.

Polyteles, Gould, Proc. Zool. Soc. 1863, p. 232 (part.).



Portion of wing of *Spathopterus alexandræ*, nat. size.

(This figure, reproduced from a drawing kindly made by my colleague, Mr. Edgar R. Waite, F.L.S., will give ornithologists a better idea of this extraordinary new genus of Parrakeets than a long and minutely detailed description.)

Generic Characters.

Adult male. Similar to that of the genus *Polytelis*, except in having the end of the third primary of each wing singularly elongated and terminating in a spatule. Length of spatulate tip 0·75 inch; beyond the end of the second primary 0·5 inch.

Adult female. Destitute of spatules.

Type. S. ALEXANDRÆ (Gould); Salvad. Cat. B. Brit. Mus. xx. p. 477.

Range. Central Australia.

RHIPIDURA ALBICAUDA, sp. n.

Adult male. Like *R. albiscapa*, but differing from that species in having all but the two centre tail-feathers pure white, narrowly edged with blackish brown on the basal half of the outer webs of all the feathers except the outermost one on either side. Total length 5·8 inches, wing 2·8, tail 3·5, bill from gape 0·45, tarsus 0·62.

The sexes are alike in plumage.

Hab. Stokes Pass, Central Australia.

Obs. This specimen has probably barely attained its adult livery, for in a female obtained on the Levi Range the *two* outermost tail-feathers on either side are pure white.

XEROPHILA NIGRICINCTA, sp. n.

Adult female. Like *X. pectoralis*, from Port Augusta, but distinguished by having the breast crossed by a narrow black band, instead of a broad and well-defined band of cinnamon-brown across the chest, as in that species. Total length 3·9 inches, wing 2·2, tail 1·7, bill from gape 0·45, tarsus 0·68.

The sexes are alike in plumage.

Hab. Missionary Plain, Central Australia.

PTILOTIS KEARTLANDI, sp. n.

Adult male. General colour above pale greyish brown, slightly tinged with olive-yellow, and gradually passing into grey on the crown of the head and buff on the rump; upper tail-coverts more distinctly tinged with olive-yellow; primaries, secondaries, and their coverts brown, strongly washed with bright olive-yellow on their outer webs, the median series of the greater wing-coverts slightly tinged with buff; lesser wing-coverts brown washed with grey; tips of secondaries and the outer webs of the three longest primaries towards their tips narrowly edged with dull ashy white; tail-feathers brown externally, washed with bright olive-yellow, and all but the two centre tail-feathers having dull whitish tips; a line in front and the feathers above and below the eye blackish; ear-coverts silky grey, slightly tipped with blackish brown; extending behind, and partially concealed by the posterior and lower corner of the ear-coverts, a conspicuous patch of bright yellow feathers; cheeks, chin, throat, and all the under surface pale lemon-yellow, becoming slightly darker on the centre of the throat and fore-neck, each feather of the latter and those on the sides of the breast having a narrow indistinct line of brown down the centre; thighs brown; under tail-coverts pale lemon-yellow; under wing-coverts and inner margins of primaries pale fulvous: bill blackish brown; legs and feet fleshy brown. Total length 5·6 inches, wing 3·13, tail 2·2, bill from gape 0·7, tarsus 0·8.

The sexes are alike in plumage.

Hab. McMinn's Range, Central Australia.

This very distinct species of *Ptilotis* I have named after Mr. George Arthur Keartland, whose assiduity and perseverance as ornithological collector contributed so much to the success of the expedition.

CLIMACTERIS SUPERCILIOSA, sp. n.

Adult male. Like the male of *C. erythrops*, but differing from that species in having a smaller bill; the crown of the head greyish brown instead of blackish brown; the band through the wing rich buff instead of pale greyish buff; the ear-coverts greyish black streaked with white instead of uniform greyish brown; and the orbital region and superciliary stripes pure white instead of rusty red. Total length 5·7 inches, wing 3·55, tail 2·55, bill from forehead 0·6, from gape 0·73, tarsus 0·73.

Adult female. Like the male in colour, but having the white superciliary stripes margined above by narrower lines of rusty red and the feathers on the centre and lower part of the fore-neck dull white edged with pale rusty red. Total length 5·7 inches, wing 3·4, tail 2 5, bill from forehead 0·6, from gape 0·73, tarsus 0·73.

Hab. Illara Creek, Central Australia.

TURNIX LEUCOGASTER, sp. n.

Adult female. General colour above chestnut-brown, each feather being more or less broadly margined with buffy white; bases of the feathers on the top of the head black, their inner webs whitish, forming a conspicuous stripe down the centre of the head; nape and hind-neck pale chestnut-brown, each feather being submarginally edged on either side with a narrow line of black; scapulars, back, rump, and upper tail-coverts and tail more distinctly lined with black, and having three or more irregularly shaped cross-bars on each feather, the scapulars being broadly margined with buffy white and having a spot of ochraceous brown near the tips; primaries, secondaries, and primary-coverts blackish grey; outer web of the first primary and edge of the wing white, the remainder narrowly edged with buff, also the tips of outer webs of secondaries and inner webs and tips of primary-coverts; tertiaries like the scapulars, but having three irregularly shaped white spots on the outer webs of the two longest feathers; remainder of the wing-coverts light red, broadly edged with pale buff and marbled with black near their tips, the lesser coverts slightly duller and more broadly tipped with black; lores and superciliary stripes white tipped with pale chestnut; feathers below the eye, sides of the face and neck, white with blackish tips; chin and throat white; fore-neck pale buff; sides of the chest dull chestnut-red, tipped with pale buff, and gradually becoming darker on the sides of the breast, where the feathers are submarginally edged with black near their tips; remainder of the under surface and under tail-coverts dull white: bill bluish horn-colour; legs and feet yellowish white. Total length 5·2 inches, wing 2·9, tail 1·3, bill 0·47, tarsus 0·7.

Hab. Davenport Creek, Central Australia.

This new species of *Turnix* is allied to *T. velox* and to *T. pyrrhothorax*, but the almost uniform white under-surface will serve to distinguish it from either, and from every member of the genus yet discovered in Australia.

XXVII.—*On the Bower-bird recently described by Mr. C. W. De Vis as* Cnemophilus mariæ. By P. L. Sclater, M.A., Ph.D., F.R.S.

(Plate VIII.)

As already recorded in this Journal (above, p. 280), Mr. C. W. De Vis, the Curator of the Queensland Museum, in a report, dated June 30th, 1894, and addressed to the Administrator of British New Guinea, described a collection of birds made by Captain Armit and Mr. Guise during Sir William Macgregor's recent exploration of Mount Maneao. Amongst the new birds characterized on this occasion was what Mr. De Vis considered at the time to be a second species of his lately instituted genus *Cnemophilus*, which was dedicated to Lady Macgregor as *Cnemophilus mariæ*. Of this species a male had been obtained on Mount Maneao in the month of April at an elevation of 5650 feet, and a young male and five females at 5000 feet. In his report Mr. De Vis described *Cnemophilus mariæ* as follows:—

"*Male.* Wholly black; upper surface of wings and tail with a brilliant blue sheen, remainder of body-plumage velvet-black (duller on rump and abdomen) with a fainter sheen; post-nasal plumes flat, squamate, highly iridescent, forming a nasal shield, meeting its fellow of the opposite side in a slight ridge over base of culmen; under surface of wing and tail deep fuscous; legs dark brown; bill black. Length 185 mm., culmen exposed 13, wing 96, tail 76, tarsus 38.

"*Female.* Upper surface olive-green; edges of feathers brown, forming transverse bars on the neck and back, and more or less distinctly on the head; lower back, rump, and upper tail-coverts with few or no bars; lower surface yellower, especially on abdomen; feathers from chin to upper breast brown-edged; wing fuscous; outer edges of quills rufous; wing beneath brown, inner webs pale rufous from base of first primary to near the tips of the secondaries; under wing-coverts pale yellowish buff; tail rufous brown, washed with olive; under surface fuscous brown; legs brownish black;

XXVIII.—*On the Pterylography of the Hoatzin,* Opisthocomus cristatus. By W. P. Pycraft, M.B.O.U., Assistant to the Linacre Professor of Comparative Anatomy, Oxford.

(Plates IX.–XI.)

Although several writers have recorded observations on the pterylography of *Opisthocomus,* no one hitherto has given a really complete account of the pterylosis either of the adult or of the earlier stages. So far as the material which has been submitted to me has permitted, I have endeavoured to fill this gap, and trust I shall be found to have succeeded. Certain points relative to the development of the neossoptiles and embryonic rhamphotheca (p. 352) are yet under investigation; but these belong rather to the province of histology than pterylography, and will be treated of in a future paper, together with a few details concerning certain muscles which I have studied.

My investigations have been carried on in the Department of Comparative Anatomy of the Oxford University Museum, and hence have been subject to the control of Prof. E. Ray Lankester, to whom I wish to express my thanks for grants of time from other work, and for other favours.

I propose to proceed with my description from the known to the unknown, from the adult to the embryo.

I. *Pterylosis of the adult* Opisthocomus.

Pterylæ :—

Pteryla capitis (Pl. IX. fig. 1, *Pt.cap.*).—Of the feathers of this tract on the sides of the face nothing remains but a few bristles, which represent the shafts of sometime feathers. The eyelids are provided with eyelashes.

*Pt. colli** (Pl. IX. figs. 1–3, *Pt.coll.*).—This is a con-

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* Usually the neck-tract is divided into a dorsal and a ventral band by an apterium—the apt. colli laterale. Sometimes, by a forward extension of the *apterium mesogastræi* and *spinale,* the neck-tract is divided not into a dorsal and ventral, but two lateral tracts—the *pterylæ colli laterales* of Nitzsch.

I propose now to restrict the term *pt. colli* to those cases in which the tinuous tract, more or less completely investing the neck. There is a distinct tendency to form a *pt. colli dorsalis* and *pt. colli ventralis* (see footnote), in that the feathers in the mid-dorsal line stand closer together than on the sides of the neck, in which region they are somewhat sparsely distributed, thus suggesting an incipient differentiation into the usual dorsal and ventral tracts (see footnote).

Pt. ventralis (Pl. IX. figs. 2, 3, *Pt.v.*).—This tract completely invests the whole of the upper part of the breast, rather below the middle of this region; that is to say, a short distance above the sternal callosity (p. 352) it divides into two widely separate and very narrow branches, which, gradually expanding, terminate a short distance in front of the cloacal aperture. This tract is noticeable throughout for the sparseness with which the feathers are distributed.

Pt. ani (Pl. IX. figs. 2, 3, *Pt.a.*).—A circlet of small feathers surrounding the cloacal aperture.

Pt. humeralis (Pl. IX. fig. 1, *Pt.h.*).—A clearly defined, though small and slightly developed, tract of some two or three feathers in width. The constituent feathers are but slightly stouter than those of the *pt. spinalis* running down beside it, but they are very long, the most posterior and longest reaching nearly down to the tail. Passing forwards and downwards this tract is lost in the upper portion of the pt. ventralis.

Pt. femoralis (Pl. IX. figs. 1–3, *Pt.f.*). The feathers of this tract are very long and sparsely distributed; it is connected both with the *pt. spinalis* and *pt. cruralis*.

Pt. cruralis (Pl. IX. figs. 1–3, *Pt.cr.*).—This tract is com-

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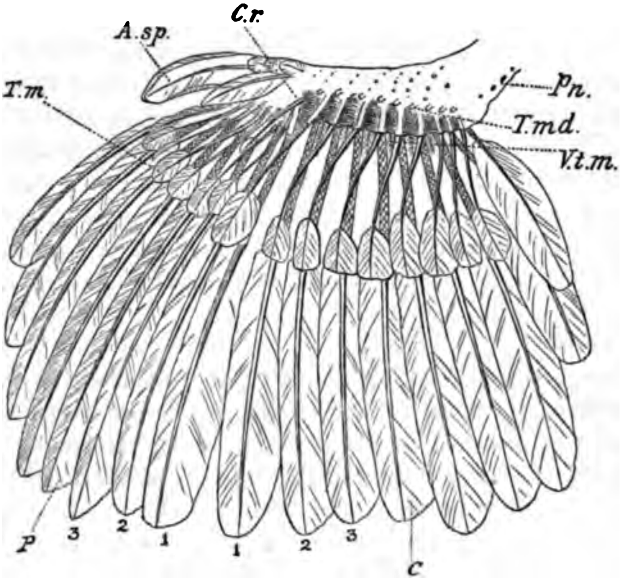
neck-tract is continuous; when, as in the typical arrangement, the tract is divided into a dorsal and a ventral band, I would distinguish the former as the *pt. colli dorsalis* and the latter as the *pt. colli ventralis*.

Pt. colli is a new name recently adopted by Dr. Gadow in Prof. Newton's 'Dictionary of Birds,' and should be gratefully welcomed. Up to the present the neck-tracts have been described simply as the dorsal and ventral moieties of the spinal and ventral tracts; although this system was perfectly correct, yet, as those who speak from practical experience know, it was not always convenient.

posed of long and fairly well-developed feathers; on the inside of the leg they are smaller and have a discontinuous vexillum.

Pt. uropygii (Pl. IX. figs. 1, 3, *Pt.u.*).—A large, thick, brush-like tuft of downy feathers surmounts the oil-gland, whilst its base is encircled by a ring of down-feathers having a large aftershaft.

Fig. 1.



Wing of *Opisthocomus*, extended.

Left wing of *Opisthocomus* (adult), showing the form when fully extended. The proximal portion of the vane of the remiges and major coverts has been removed. *A.sp.* Ala spuria; *C.r.* Carpal remex; *C.* Cubitals; *T.m.* Tectrices majores; *V.t.m.* Ventral tectrices majores; *T.md.* Tectrices mediæ (cut short); *Pn.* Parapteron; *P.* Primaries (metacarpo-digitals).

Pt. alaris (woodcut, fig. 1).—Remiges:—Metacarpo-digitals (primaries) 10. Cubitals (secondaries) 11. Quintocubital.

As will be seen in the figure, the remiges are of great length relatively to the length of the limb; the longest remex of both primary and cubital series is almost twice the combined length of the manus and forearm. The metacarpo-digital remiges are not separated from the cubital series by a diastema, as is usual, but are closely approximated, the space between the two series being about equal to that dividing any two "metacarpals." In other birds the "carpal diastema," as I propose to call it, is considerable—rarely less than the space dividing any two of the cubital remiges, which are always the more widely spaced. This crowding of the two series of remiges seems to be correlated with low powers of flight.

Of the cubital remiges it is interesting to remark that usually one finds they are separated by fairly uniform spaces, —decreasing proximally—whilst here the space dividing Nos. 1 and 2 is less than the similar space separating each of the remiges from 2–5, where the spaces appear to be rather above what I should be inclined to fix as the normal width.

Tectrices :—

T. majores (woodcut, fig. 1, p. 347, *T.m.*).—Usually the major coverts on the dorsal surface of the manus are as perfectly developed as those on the cubitus; in *Opisthocomus*, however, it will be noticed that the feathers of this region are much smaller than the cubital coverts. This is an arrangement which occurs but seldom. I find it to obtain in such forms, for instance, as *Psophia*, *Dicholophus*, and *Musophaga*. Although possibly of no great significance, this is an interesting fact.

On the ventral surface this series is throughout reduced to relatively small discontinuous feathers with a degenerate hyporhachis (fig. 1, *V.t.m.*).

T. mediæ (woodcut, fig. 1, p. 347, *T.md.*).—The cubital coverts of this series on the dorsal surface increase in length from without inwards, so that the most proximal feathers are more than half as long as the major coverts underlying them.

On the manus Nos. 1–4 are absent, as is often the case with other birds; the remainder of the series is fairly well developed.

On the ventral surface this series is represented only on the cubitus, where they appear as very small discontinuous feathers, with a degenerate hyporhachis.

T. minores.—On the dorsal surface, commencing in the carpal region with two rows, an additional row is added proximally, owing to the increased space afforded by the muscular surface of the forearm and patagium. They may be described as relatively long feathers. Proximally the last row (pre-axial) is continued for a short distance on to the arm. This series is absent on the hand.

On the ventral surface there are two cubital rows, widely separated; the second is continued over on to the manus. A third row is indicated by the presence of some two or three feathers along the pre-axial border of the muscles of the forearm.

T. marginales.—There are three cubital rows of this series. Examined from the pre-axial margin of the wing backwards, these rows will be found to become somewhat closely approximated in a direction transversely to the main axis of the wing; thus groups of three are formed; between each two such groups a considerable diastema intervenes, interrupted only by a feather in the extreme pre-axial margin in the middle of the diastema; this feather is longer than its fellow on either side. This arrangement is expressed by the accompanying dots (⋮˙⋮). A similar arrangement obtains in most birds, but the rows (transverse) are much more numerous and so closely crowded as to render a correct interpretation difficult. This series connects the pt. alaris with the pt. ventralis, and distally clothes the extreme pre-axial border of the manus.

On the ventral surface there are three rows of these coverts, of which two run along the extreme pre-axial border of the cubitus, whilst the third is placed a little further back; the first row is longer, and the second shorter, than is normally the case in other forms.

Ala spuria (woodcut, fig. 1, p. 347, *A.sp.*).—The ala spuria is composed of four large "remiges," almost equalling in length the t. majores of the cubitus.

Carpal remex (woodcut, fig. 1, p. 347, *C.r.*).—On the whole I am inclined to regard this feather as the "remex," and not the "covert" of Degen (2). It is rooted in the very small carpal diastema at the base of the first metacarpal remex, and is a relatively large and well-developed feather, being about as long as the cubital t. mediæ.

Parapteron (woodcut, fig. 1, p. 347, *Pn.*).—The parapteron is composed of two rows of feathers, which, as usual, seem to be serial with the t. majores and t. mediæ. The feathers along the post-axial margin are the longest. The third row of smaller feathers intercalcated between the post-axial rows appears to be wanting.

Hypopteron (Pl. IX. fig. 3, *H.*).—Represented by five moderately long and somewhat semiplumous feathers arising over the region of the dorsal border of the pectoral muscles, and extending outwards on to the arm running along the post-axial border, and not forward, as usual.

Apteria:—

Apterium capitis (Pl. IX. fig. 1, *Apt.cap.*).—Represented by a large space embracing almost the whole side of the head, and is apparently of a light blue colour in life. The surface of this space is broken up by the bristles previously referred to, running down in front of and beneath the eye, a few feathers round the opening of the external ear, and a small patch of feathers between that orifice and the rhamphotheca of the mandible.

Apt. spinale (Pl. IX. fig. 1, *Apt.sp.*).—Extends from between the shoulders to the region just above the posterior border of the ilium.

Apt. trunci laterale (Pl. IX. figs. 1–3, *Apt.t.lat.*).—Arising from the same region as the spinal apterium, from which it is divided only by a narrow strip of the pt. spinalis, it extends backwards to the femoral tract; expanding meanwhile downwards, it embraces almost the whole side of the body.

Apt. mesogastræi (Pl. IX. figs. 2, 3, *Apt.m.*).—A somewhat pyriform space extending from the region rather below the middle of the breast to the cloacal aperture.

Apt. alæ superioris (Pl. IX. fig. 1, *Apt.a.sup.*).—The small space dividing the humeral from the wing-tract.

Apt. alæ inferioris (Pl. IX. fig. 3, *Apt.a.inf.*).—Embraces the pre-axial border of the ventral surface of the arm and patagium.

Down-feathers :—

These are distributed sparsely over the whole body; but on the head and upper part of the neck they are reduced to the verge of extinction. On the trunk they are very long, and more or less definitely arranged, so as to run in double rows between two rows of contour-feathers (see Pl. X. figs. 2, 3, indicated by small dots). This rule, however, is by no means strictly adhered to, since it often happens that down-feathers intrude themselves between contour-feathers, *i. e.* run transversely to the general parallel lines.

Pulviplumes or *Powder-down.*—Absent.

Filoplumæ.—One at the base, and to the outer side, of every contour-feather. They are about half as long as their respective contour-feathers, have a black shaft and light yellow vexillum. Those accompanying the remiges are rather larger and have a considerable vexillum.

Structure of the Contour-feathers.—A noticeable feature about the contour-feathers is their fewness and relatively great length throughout the whole body. The individual feathers preserve their pennaceous structure throughout to a singular degree, inasmuch as the rami at the base of the contour-feathers usually become more or less downy, whilst here only the extreme edge of the vane or vexillum takes on this downy structure.

The aftershaft, though nearly half as long as the main feather, has a short and very slender axis, bearing a few long and delicate rami, the radii presenting the appearance of minute setæ along the shaft of the ramus. In the feathers on the head the transition from contour-feathers to simple bristles can be traced by a series of most perfect gradations.

Structure of the Plumulæ.—The down-feathers form large brush-like tufts, and possess both rhachis and aftershaft, which is of considerable size. Microscopically the radii, like the neossoptiles, have well-developed fila; in this they differ from the nestling plumulæ, in which fila are rare.

Rhamphotheca.—Simple. Nostrils impervious, nearer the base than the tip, and having a comparatively large, oval, unprotected orifice. Along the rhamphotheca of both upper and lower jaws, on the inner side, a little removed from the tomium, there runs a short ridge extending from the back of the mouth forwards to a point corresponding with the anterior margin of the external nares; this ridge supports a row of horny cones, which are probably used for crushing the fruit on which the bird largely lives*.

Podotheca.—Scales on the acrotarsium large, reticulate, on the acropodium shield-shaped. Planta granulated.

Claws on the wing absent, on the feet moderately large.

Sternal callosity.—This is an elliptical horny patch of skin lying immediately over the sternal keel, and is apparently due to the fact that this part of the body is applied to the branch upon which the bird is resting: as will be seen in Pl. IX. fig. 3 (*St.cal.*), it is placed obliquely to the long axis of the trunk, hence is well adapted for this purpose. Such a horny pad is rare amongst birds; the Rhea and Ostrich may be quoted as examples in which it occurs.

Moulting.—According to Mr. Quelch (11) there is no periodic moulting-season, but the feathers are renewed fitfully: that is to say, moulting goes on all the year round.

II. *Pterylosis of the Nestlings of* Opisthocomus.
(Pl. X. figs. 1–3.)

There are five nestlings exhibiting as many gradations in the development of the plumage; I shall therefore describe them in five stages, remarking, however, only such particulars as are of any importance.

Pterylæ.—So far as the distribution of the feathers is concerned, a reference to the Plate will show that the pterylosis of the nestling differs from that of the adult chiefly in that the pteryla ventralis is continuous as far as the sternal callosity, instead of dividing at some distance in front of this point.

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* I have purposely deferred a more careful description until I have made a thorough examination of the rhamphotheca in all stages of development.

The mode and rate of development of the nestling-plumage reveals some points of considerable interest.

In stage 1 (Pl. X. figs. 1–3) the body is but scantily clothed by the neossoptiles*; between these, minute specks, arranged more or less definitely in rows, can be seen; these are the tips of developing plumulæ or down-feathers, concerning which we shall have more to say later.

Pt. alaris (Pl. XI. fig. 2).—Here it will be noticed that the remiges are just beginning to make their appearance, bearing out the neossoptiles on their tips. The proximal primaries are furthest developed; the proximal cubitals are indicated by neossoptiles.

T. majores.—These are, as yet, only represented by neossoptiles above their respective remiges. The remaining tectrices are represented by the tips of the neossoptiles breaking through the skin.

Stage 2. The plumulæ have increased in size so as to appear like little brush-like tufts; but on the head and back part of neck they remain much as in stage 1.

Pt. alaris:—

Primaries.—These have now pushed their way out a considerable distance beyond the wing, the individual remiges preserving the same relative lengths as in stage 1; remex 10, however, must be excepted, inasmuch as nothing but the neossoptiles can be seen.

Cubitals.—Preserve the same relative length as in stage 1; the proximal remiges are as yet only indicated by neossoptiles.

Tectrices:—

T. majores.—The definitive feathers on the dorsal surface of this series are now making their appearance. The remainder of the coverts are as yet only represented by neossoptiles. The under surface of the wing appears as though sparsely besprinkled with minute down-tufts, more or less definitely arranged, and indicating the definitive feathers.

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* For the origin and meaning of this term see 'Dictionary of Birds,' Newton, Article "Feathers," p. 243.

Stage 3. The true down-feathers (plumulæ) have still further increased, save those on the head and neck, which still remain undeveloped.

Pt. alaris:—

Primaries.—The vanes of these feathers are beginning to unfold, and have considerably increased in length. The sheath enveloping the vane of remex 10 is just appearing.

Cubitals.—The development of these remiges decreases from without inwards. Thus, while No. 1 is about as long as the major covert of the hand, or, in other words, is about half an inch long, No. 10 is as yet only represented by its neossoptile.

Tectrices:—

T. majores.—Those on the hand rather more than half as long as primaries; the vane is just beginning to burst through its enveloping sheath.

On the cubitus they are much further developed than their respective remiges, so that they appear rather as remiges than coverst. Like the remiges, they decrease in length from without inwards, so that only a small portion of the vane of the most proximal covert has yet appeared.

T. mediæ.—The definitive feathers of Nos. 1–3 have just begun to make their appearance.

Under surface of wing as in stage 2.

Stage 4. The function of the neossoptiles is on the wane, inasmuch as they now appear borne out upon the pencil-like* tips of the definitive feathers.

The true down-feathers (plumulæ) have greatly increased, so as to almost entirely conceal the skin; on the back part of the head and neck, however, their development is very slight.

Pt. alaris:—

Primaries.—These have greatly increased in length.

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* The vanes of the definitive feathers, at a certain stage of development, resemble a camel-hair pencil brought to a fine point.

Cubitals.—The proximal remiges still remain undeveloped, being only represented by the neossoptiles.

The contour of the wing has now changed, and the post-axial margin has extended backwards towards the free finger-tip; this will be seen better in stage 5.

Stage 5. The plumage is now made up partly of the pencil-like tips of the definitive feathers, and the neossoptiles, attached to their tips, and partly of plumulæ, which have now attained considerable size. The neck, however, is still but sparsely clothed. The down-feathers remain at about the same grade of development as in stage 1.

Pt. alaris (Pl. XI. fig. 3):—

Primaries (*P.*).—As a reference to the figure will show, these have now attained considerable dimensions, probably sufficiently to serve on occasion the purposes of flight.

Cubitals (*C.r.*).—The most proximal remiges have just pushed beyond the post-axial margin of the wing, whilst, as will be seen in fig. 3, the first remex of the series (the most distal) is about equal in length to its major covert; the rapid decrease in length of these remiges from 1 backwards is well seen in the figure, where only four remiges can be traced.

Tectrices:—

T. majores.—The dorsal row of these coverts (Pl. XI. fig. 3, *C*), like the remiges, is much further developed on the manus than on the cubitus.

T. mediæ.—Just appearing on the hand and distal portion of the forearm. The under surface of the wing is sparsely clothed with long slender neossoptiles, but gives no further evidence of the definitive feathers.

III. *Structure of the Neossoptiles and Plumulæ.*

Neossoptiles (Pl. XI. fig. 5, *N.*).—These are umbelliform, each consisting of some 15 rami, bound closely together at their base and continuous below with the definitive feather which it represents; there is, as the term umbelliform implies, no rhachis, and not even, as is often the case, a calamus or quill. These rami are produced into long filaments, which extend beyond the most distal radii. Under a high power of the microscope (Pl. XI. fig. 6) the radii are seen to be composed of a series of flat lamellæ, or strap-shaped rods, joined end to end, and decreasing from the base upwards; the upper and lower margin of each radial segment are produced into a very delicate filum[*] or thread. These fila decrease in length towards the tip of the radius. The radii are of a nut-brown colour, the pigment being distributed in granules.

Plumulæ.—The plumulæ—the true nestling-down in this case—which develop towards the end of the nestling period, differ from the neossoptiles in that the rami are more numerous, forming thick brush-like tufts, and are not far produced beyond the radii. Microscopically the radii are found to be longer than in the adult plumulæ, and fila occur sporadically and rarely.

Rhamphotheca.—The cone-shaped elevations on the inside of the rhamphotheca described in the adult (p. 352) can be traced in all the nestlings, but not without difficulty in stages 1 and 2.

IV. *Pterylosis of the Embryo.* (Pl. XI. fig. 4.)

The pterylosis of the embryo presents us with two distinct phases. Stage 1 was kindly contributed by Prof. Newton, and roughly corresponds with a 5–6-day chick embryo. Here we have almost the earliest trace of feathers, which appear as small papillæ, mapping out the pterylæ as seen in the adult. The lower portion of the spinal and femoral tracts are somewhat imperfectly preserved; hence I cannot be so certain as I could wish as to their *precise* form, but I believe I have interpreted these parts correctly.

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[*] I propose to substitute the word filum in future in place of "cilium;" the special sense in which this latter word is now employed renders its use in connection with feathers objectionable. I cannot lay claim, however, to the credit of this renaming; for, having brooded long and ineffectually upon the point, I at last consulted Dr. Benham (Aldrichian Demonstrator of Comparative Anatomy), and he helped me out of my difficulty by suggesting the highly appropriate term "filum."

In stage 2 the region immediately in front of and surrounding the sternal callosity, as also that portion of the apt. mesogastræi below this callosity to the umbilicus, bears long filaments representing either down- or contour-feathers, but these apparently disappear before hatching. The pt. spinalis is continuous with the pt. femoralis, the two fused tracts extending backwards to the tail. The apterium behind and below the external ear is relatively larger than in the nestling or adult, since it seems to extend for a short distance down the neck.

The conditions obtaining in this second stage seem to contradict what we find in the earlier embryo, nestling, and adult, inasmuch as the *apt. mesogastræi* is very narrow and gives promise of being clothed with either definitive or down-feathers; the spinal and femoral tracts occupy a larger area and are confluent, and the space below the external ear extends down to the neck. I am inclined to consider that the embryo feathers on the *apt. mesogastræi* should be regarded as representing definitive rather than down-feathers, in that, these excepted, there are no traces of down-feathers visible on the body; the down-papillæ having now sunk below the surface, the feather itself will not make its appearance till after incubation.

Rhamphotheca.—In some of the older embryos the conical elevations on the inner side of the rhamphotheca (p. 356) can be plainly discerned; in addition, I find on the tip of both upper and lower jaws a remarkable papillated pad, which I propose to submit to a careful microscopic examination, the results of which I shall submit to the readers of 'The Ibis,' together with some other observations on the tooth-like structures on the rhamphotheca of the nestling Tinamou described in my last paper ('Ibis,' 1895, p. 1).

Let us now collect and analyze such of the foregoing statements as will enable us to express briefly the chief characteristics of the pterylosis of *Opisthocomus*, as well as those which appear to be new in connection with the present paper.

The main features about the pterylosis of *Opisthocomus* appear to me to be that the feathers are remarkably few and sparsely distributed; as a natural consequence the pterylæ are but feebly defined.

The contour-feathers, as already pointed out, are characterized by their comparatively great length and freedom from downy rami at the base; further, they are somewhat harsh to the touch and coarse in structure, a feature which my readers will recall as characteristic of certain *Cuculidæ*, e. g. *Centropus*.

V. *Systematic Position of* Opisthocomus.

As to the systematic position of *Opisthocomus*, as indicated by its pterylosis, I had rather not express an opinion yet, for the very good and sufficient reason that I do not possess sufficient reliable data. Nitzsch's is really the only work of reference, and I have lately found so many of his figures incorrect that it seems to me unwise to waste time in making comparisons which depend upon the accuracy of this author's figures for their value.

Quite recently Mr. Beddard has generously provided me with a collection of *Cuculidæ* and *Musophagidæ*, and when I have carefully examined all these I propose to present the readers of 'The Ibis' with a brief summary of the result. There then remains to be worked out the pterylosis of the obviously more closely related *Galli* and the *Rallidæ*. To postpone the publication of the present paper until all this has been done seems to me unwise, especially since it probably would nearly double its bulk. We might, however, with some profit perhaps, run through the most noticeable points in the pterylosis of *Opisthocomus*, so as to bring out, as far as is possible, those in which it agrees or disagrees (1) with the *Galli* and (2) with the *Cuculi*, and also certain Ralline affinities which have been ascribed to this bird Thus, then, *Opisthocomus* agrees with the *Galli* in that the wing is quintocubital, in the remarkable order of the development of the metacarpo-digital remiges (primaries), and in that the number of these remiges is 10. With the *Cuculi* there is a striking general resemblance in the pterylosis and in the distribution of the feathers of the spinal tract in particular. Thus, in *Turacus* and *Centropus*, for instance, the pt. spinalis has run down and fused with the pt. femoralis, whilst in *Opisthocomus* that portion of the apt. trunci lateralis dividing these tracts is sparsely covered with both down-feathers and semiplumes. Now it seems to me that these semiplumes are to be regarded as degenerated contour-feathers*, as was suggested long ago by Garrod (see p. 366), the evident remains of a once continuously feathered area. Again, there is a striking similarity in the pterylosis of the wing of *Turacus* and *Opisthocomus*. We may count as Ralline†, or perhaps Gruiform, the structure of the "neossoptiles" (p. 355), since this agrees precisely with that of *Crex*, for instance, but is entirely different from the Galliform neossoptile, with its well-developed rhachis and aftershaft. The presence of down both on the pterylæ and apteria is another Gruiform character. The position of the external nares might, perhaps, be taken into consideration here—if it have any weight at all. But, in that we can divide the nestling-plumage into neossoptiles and plumulæ, *Opisthocomus* appears to be unique. This is a matter, however, for further investigation, though up to the present plumulæ have never been described as forming part of the plumage of the nestling, which has always been supposed to consist of neossoptiles ("nestling-down") only.

The nestling makes up for any lack of novelty that may be deemed to be wanting in the adult.

The young of *Opisthocomus* are nidifugous, and, as we have already seen, sparsely clothed in a covering of fine down, which, in its thickness, would seem to be somewhat intermediate between that of the Pigeon on the one hand and the Fowl or Rail on the other. This downy covering is formed in the same place as the future definitive feathers. Dr. Gadow has recently aptly named these "nestling down-"

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* The conditions which obtain at a certain stage of development in the embryo tend to support this view (see p. 363).

† I speak guardedly here, as I have not yet had an opportunity of examining a series either of nestlings or adults of this group.

feathers "neossoptiles." In addition to this covering of neossoptiles, there is developed towards the end of the nestling-period a second downy covering, which, for a time, bears a considerable share—if not the greater part—in clothing the bird. This second downy covering is composed of true down-feathers or plumulæ, and, so far as I am aware, such a covering has never before been described in any nestling.

In the wing of the nestling we have a revelation of profound importance, for, so it seems to me, through it we get a glimpse into the phylogeny not only of its immediate allies, the *Gallinæ,* but possibly of the whole avian class.

The first step in the direction of this discovery was made by Mr. Quelch (12) when he found that the nestling of *Opisthocomus* used its wings to assist it in climbing about the trees in which its nest was placed. In a most valuable and interesting paper he details with great clearness the wonderful life-history of these birds. Suffice it here to say that *Opisthocomus* is arboreal in the strictest sense of the word, since it rarely, if ever, descends to the ground; hence the enormous feet and sternal callosity. Nidification is performed in trees, apparently those overhanging the water for preference. As I have already elsewhere written (11), "the young . . . . instead of remaining in the nest until they are able to fly, are in the habit, at a very early stage in their life, of climbing out of the nest, it may be to gain a better coign of vantage whence to meet the parents returning with food, or to take refuge in more dense foliage to escape an enemy—sometimes the one and sometimes the other cause impels them to leave their home; in either case it is obvious that the chances of a fall are exceedingly probable. Now, as might have been expected, these youngsters are particularly capable of taking care of themselves, possessing not only enormous feet fitted for grasping—like the parents—but they have powerful auxiliaries in the shape of the beak, which is used much as is that of a Parrot in climbing, and wings, which are armed with large claws on the first and second digits. On turning to fig. 2, p. 361, it will be seen that the general form of the wing renders such a mode of

Fig. 2.

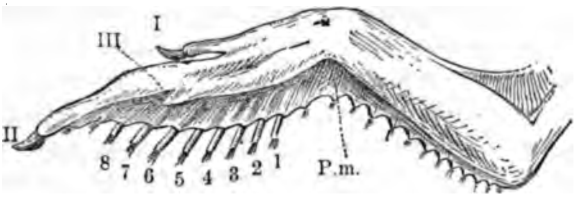

Fig. 2.—The right wing of a nestling *Opisthocomus cristatus*, ventral view, showing how that the 2nd digit (II.) is produced beyond the ala membrana (P.m.), and that the development of remiges 8–10 has been arrested, so as not to interfere with the freedom of the long finger when climbing.

Fig. 3.

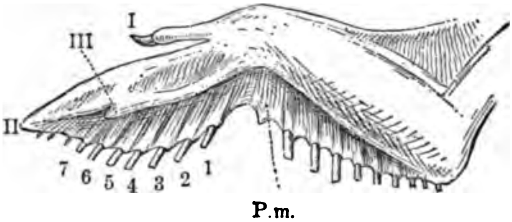

Fig. 3.—The right wing of a nestling of a Common Fowl (*Gallus bankiva*), an ally of *Opisthocomus*. Owing to the exchange of an arboreal for a terrestrial habit, the manus is gradually shortening. The pollex only retains the claw. The 2nd digit projects but slightly beyond the ala membrana; but the development of the most distal remiges is still arrested.

Fig. 4.

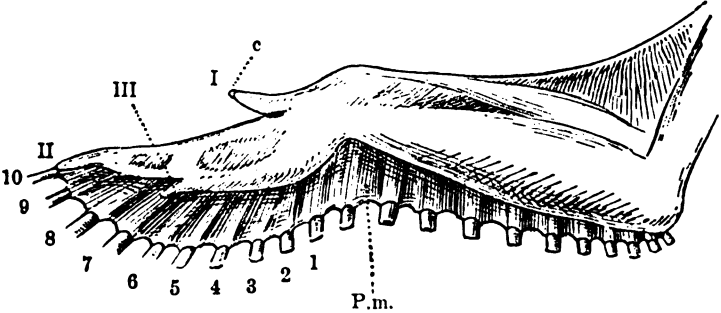

Fig. 4.—The right wing of an adult *Opisthocomus cristatus*, ventral view. Contrast with that of the young bird, and the manus will be found to be shorter than the forearm; the "pollex," or "thumb," is considerably reduced, as is also digit II. The claw may be seen on the pollex as a slight wart (*c*). 1–10. Metacarpo-digital remiges, or quill-feathers; P.m. Ala membrana, or posterior wing-membrane; *c*. Claw.

All the figures (2, 3, and 4) are original, and were drawn by the writer from the actual specimens. They have been kindly lent to this Journal by the Editor of 'Natural Science.'

locomotion quite probable, and may therefore be said to entirely corroborate Mr. Quelch's statements. The hand is considerably longer than the forearm, the pollex or thumb extends beyond the level of the tip of the 3rd digit, and is provided with a large claw; the 2nd digit, with an equally large claw, is produced beyond the fold of skin running along the posterior border of the wing, which encloses the base of the quills. Of these, it will be noticed, only 1–8 have extended any distance beyond the wing-fold just mentioned, so that a long free finger-tip is left. As the bird grows and the feathers develop, the proximal ones grow faster than the distal, so as not to impede the freedom of the hand in climbing; but as soon as the proximal feathers have increased sufficiently to serve to break the force of a fall, should such occur, the remaining distal feathers begin to develop; at the same time the hand begins to shorten till, as will be seen in fig. 4, p. 361, in the adult, the hand has become *shorter* than the forearm, the claws have disappeared, the thumb no longer extends to the level of the 3rd digit, nor does the 2nd project beyond the posterior wing-fold, the bird now being able to move from one place to another by flight instead of by climbing."

Should a nestling by any chance fall into the water, it seems that it is able to save itself by swimming, since Mr. Quelch tells us that on one occasion, happening to drop a youngster from a boat into the river, it immediately dived out of reach; coming to the surface a yard or so further on, it again dived, and finally escaped by gaining the shore and disappearing among the herbage.

It is not improbable that the life-history of *Opisthocomus* is a survival of what was at one time shared by the *Galli*, since in nestlings of *Cracidæ* and *Gallidæ* the wing exhibits precisely the same phenomena as we have just noticed in *Opisthocomus*; the details, however, are not quite the same, inasmuch as in *Opisthocomus* we have an order of things at their maximum development, whilst in the *Gallidæ* and *Cracidæ* we have the same order in its decline, and responding to the demands of a changed environment.

In the wing of the nestling of *Crax*, the Common Fowl (fig. 3, p. 361), and the domestic Turkey, I find that remiges 1–7 have attained a considerable degree of development, while the three distal remiges are as yet only represented by neossoptiles; thus, as in *Opisthocomus*, a free finger-tip is left. The exchange, however, of a terrestrial for an arboreal habit has brought about an exaggeration of one feature whilst it is eliminating others, inasmuch as an accelerated development of the metacarpo-digital remiges has plainly taken place, whilst the once long hand is being gradually shortened; the manus, however, is still (11) "longer than the forearm, ... but the 2nd digit is scarcely produced beyond the wing-membrane, and the claw has been lost, though present in the embryo, the pollex has retained the claw and extends just up to the 3rd digit."

The accelerated development of the metacarpo-digital remiges, just referred to, can best be understood by a comparison of fig. 3, p. 361, representing the wing of a nestling Fowl, with that of *Opisthocomus* (stage 5), Pl. XI. fig. 3. A glance will serve to show that while in *Opisthocomus* all the remiges are represented by definitive feathers, and whilst there is a perfectly easy gradation in the length of the same from within outwards, the terminal feather being the smallest of the series, in that of the Fowl there is an abrupt change from definitive feathers to neossoptiles, the change taking place directly after the 7th remex.

It seems probable that these remiges have undergone what we might describe as a process of forcing—or, as I have already called it, accelerated development—in which the proximal remiges have developed at an excessively rapid rate, so as to out-distance their fellows at the distal extremity of the wing, which are as yet only represented by neossoptiles. The rapid development of these seven remiges is probably due to the fact that the terrestrial mode of life demanded the aid of the wings for the purposes of flight at an earlier period than would be the case if they still dwelt, like *Opisthocomus*, in comparative security amongst the trees. According to this theory the function of the claw of digit II. begins to wane as soon as the distal remiges project beyond its tip; and if so, it may be asked: Is the wing-area at this stage sufficient in the case of *Opisthocomus* to transform a fall into flight, or in the Fowl, having approximately the same wing-area, to enable it to rise from the ground if pursued by an enemy? By way of answer I would refer to Pettigrew's experiments (10) on flight made upon the Common Sparrow. Of one of these he writes, "Detached the half of the secondary feathers and a fourth of the primary ones of either pinion in the long axis of the wing. Flight in no wise impaired." Again, "Detached rather more than a third of both primary and secondary feathers of either pinion in the long axis of the wing. In this case the bird flew with evident exertion, but was able, notwithstanding, to attain a very considerable altitude." As a result of his experiments he came to the conclusion that "the wing-area is, as a rule, considerably in excess of what is actually required for the purposes of flight." The wing-area of the first of these two experiments which I have quoted seems to correspond roughly to that which obtains in the nestling *Opisthocomus* (Pl. XI. fig. 3) (stage 5) and of the Fowl (Pl. XI. fig. 1), and thus serves to support my interpretation of the somewhat puzzling facts we have been discussing.

Finally, in connection with this subject, I would draw the attention of my readers to the fact that in the *Galli* the remiges developed during the nestling period are replaced by others before the bird has quite reached maturity, whilst usually the original remiges are retained during the first year of life. Now, so far as I know, we are yet in ignorance as to whether (1) *all* the remiges are so replaced, or whether (2) the distal (mid-digital and pre-digital) remiges, and perhaps even the cubitals, are retained.

A more careful investigation of this point may possibly, by revealing new facts, show that the theory of the supposed sometime arboreal habits of the *Galli*, based upon the evidence of the development of the remiges, will have to follow many more of its kind into the land of oblivion; at any rate it will have played a good part if only by serving to stimulate a search after the real explanation.

VI. *Literature of the Pterylosis of* Opisthocomus.

Let us now turn to the literature of the subject. Happily this is not extensive.

Nitzsch was, I believe, the first to describe and figure the pterylosis of *Opisthocomus*. On examining his figure we find the bare, brightly-coloured skin on the sides of the face represented as if restricted to a relatively small area, partly surrounding the eye from below. The spinal tract starts, he tells us, "as a strong triserial band* from the midst of the plumage of the lower part of the neck, and divides between the shoulders into two limbs, with which the originally divergent feather-rows of the biserial hinder part are united at the end; from the caudal pit onwards it becomes somewhat broader, and encloses the oil-gland." The ventral tract, we are told, "commences as two broad bands, which run down close to the keel of the sternum, and become somewhat stronger at the outer margin. . . . . At the end of the sternum these are narrowed, and pass on, gradually becoming weaker, to the anus, at which they terminate with a breadth of only two feathers. . . . . In the wing there are nineteen remiges, of which ten are on the pinion."

The next reference to the pterylosis of *Opisthocomus* is that by Mr. J. B. Perrin (9), who, after an examination of some "spirit-specimens," seems to have persuaded himself that "the pterylography was almost identical with that figured in Nitzsch's work." As Mr. Beddard (1) has pointed out, the word "almost" in a question of pterylography "allows a considerable latitude for variation." Perrin has illustrated this portion of his paper with Nitzsch's figures, much enlarged, and not quite correctly copied.

The late Prof. Garrod (5), referring to Nitzsch's representation of the pectoral region of *Opisthocomus*, suggested that it was due to "an accidental error," and that he "evidently had an imperfect skin to work upon." He next describes the sternal callosity as "an oval area, about 0·75 inch long from above downwards, and 0·25 inch in breadth, of dense naked skin, covering the surface of the expanded upper cutaneous surface of the carina sterni." Further, he remarks, "*Opisthocomus* is one of those birds in which the pterylosis is not so decisive of its affinities as in many cases, the reason being that so great an amount of the unfeathered spaces is protected by semiplumes. May not these semiplumes in many instances be degenerated feathers? This question has never been decided, so far as I am aware."

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* Composed of three longitudinal rows of feathers.

In a somewhat extraordinary paper by Dr. C. G. Young (14), we gather the following statements as to the pterylography:—"The young is covered with a light coat of dark brown down." Of the adult he writes:—"The bill . . . . with black hairs at the base; . . . . the eyes . . . . have black eyelashes; the skin round them and on the neck is light blue, and immediately round the eye and on the sides of the head it is almost naked, having only black hairs and small feathers here and there."

"Both jaws have a row of tubercles on their inner margin that act as teeth. . . . . There is an atrophied nail on the top of the thumb and finger."

The wing of the nestling is described as "having the forearm longer than the arm, and the hand longer than the forearm. The thumb is long and well developed, and has a long well-developed claw; . . . . the point of the wing is tipped with a claw equal in size to that of the thumb; both the thumb and the finger have the power of ab- and adduction. As soon as the young escape from the egg they creep about with the assistance of these hands, stretching out their wings and digging these claws into, or hooking on to, whatever they meet . . . ."

Mr. Beddard (1) has written the most exhaustive account of the pterylosis of *Opisthocomus* hitherto published, commencing, as he does, with the adult and ending with the embryo.

In the adult, Mr. Beddard says, "the ventral surface is covered with a continuous feather-tract as far down as about halfway between the fore and hind limbs; after this there is a median bare space of some extent, which is, however, sparsely feathered. The median *apterion* does not, in fact, commence until the carina sterni, and is here exceedingly narrow, its width being precisely that of the carina; the *apterion* is sharply marked here by a straight row of feathers on each side; from this point the *apterion* is conspicuous and of some breadth, and the two ventral tracts become narrow, though connected by scattered feathering with the femoral tracts.

"The lateral ventral tracts unite with one another some way in front of the cloacal aperture.

"The spinal tracts do not show quite so regular an *apterion* as in Nitzsch's figures; indeed, the dorsal surface is sparsely feathered all over, with stronger feathers here and there, particularly anteriorly, where they form a strong band, as figured by Nitzsch.

"The humeral tracts are conspicuous, as figured by Nitzsch.

"In the nestling the condition is much the same, but the down-feathers are more numerous."

In the embryo "the ventral *apterion* is as conspicuously developed as in the adult bird. . . . . On the dorsal surface the feathering appeared to be quite uniform, though sparse; in these young chicks the ventral feathering was much closer than the dorsal."

Dr. Gadow (3) briefly refers to the pterylosis of *Opisthocomus* as follows :—"Dunen auf den Rainen und zwischen den Conturfedern. Der ganze Hals ist befiedert, ohne Seitenrain. Unterflur von der Brust an getheilt, jederseits breit beginnend, ohne Aussenast, allmählich zum After zusammenrückend und sich verschmälernd. Dorsalflur zwischen den Schultern aus jederseits zwei Reihen Federn bestehend, und undeutlich gespalten, dann als schmaler, nur zwei Federn breiter Streif, ohne Andeutung von Sattel bis zur Bürzeldrüse gehend."

Later the same author writes (4), "Die Jungen . . . . sind mit einem spärlichen gebauten. . . . . Erstlingsgefieder bedeckt," and again, "bei den erwachsenen Dunen spärlich auf den Rainen und zwischen den Conturfedern stehen und dass besonders auf den Rainen viele zu Fadenfedern umgewandelte Dunen vorhanden sind.

"Die Zahl de Schwungfedern beträgt 10 Hand- und 9 Armschwingen; von letzteren ist die fünfte vorhanden. . . . . Der Hals ist ganz befiedert, ohne Seitenraine."

Nitzsch's description and figures of the pterylosis of *Opisthocomus* are, as has been pointed out by other writers, somewhat faulty; such of his statements that I find myself unable to agree with I have quoted at the beginning of this section of my paper.

As touching the pterylosis of the head, I have already hinted that this is too densely feathered in his figure. The spinal tract in my specimens terminates in *front* of the oil-gland, and does not expand or surround it. The ventral tract, as earlier writers have pointed out, is wrongly represented as dividing at the base of the neck, whilst, as we have seen, this division actually takes place about midway between the fore and hind limbs. Nitzsch committed a much more serious error when he represented *Opisthocomus* as possessed of clavicles and a long carina sterni; a fact which, to my mind, seems to prove that this author's figures were drawn from a skin, in which case, as Garrod has suggested (5), if he had never dissected this bird, he could scarcely have been expected to divine the extraordinary development of the crop and the consequent modification of the sternum which has followed, from an inspection of the pterylosis; the fact that the sternal callosity is not indicated in his drawing seems a further proof, for in the dried skin this would probably suggest nothing more to his mind than the scar of some old wound.

I find the apterium spinale wider and more sharply defined than is indicated in Nitzsch's figure, while the tract, instead of expanding and enclosing the oil-gland, terminates as a double row of feathers in front of that gland. I find 11 cubital remiges.

One of the most interesting of Garrod's (5) observations on this subject is the suggestion that the semiplumes clothing the "unfeathered spaces" might represent degenerated contour-feathers. There seems to be very good reason for believing this may be really the case. In the nearly ripe embryo, it will be remembered, the pt. spinalis and femoralis appear to be confluent, whilst in the adult, as a reference to the figures (Pl. IX.) will show, the actual distribution of the contour-feathers in this region has become much restricted. The semiplumes distributed in the space dividing the femoral from the spinal tract probably represent degenerate contour-feathers. It remains to be seen whether, on examination of perfectly fresh specimens, these semiplumes correspond to the embryonic feathers in the same region. In my specimens many of these feathers (semiplumes) have been lost, so that it is difficult, if not impossible, to settle this point now.

Mr. Beddard's paper (1) contains one or two statements which I cannot entirely corroborate. As touching the spinal tract, for instance; although in the spirit-specimens the pt. spinalis is not so sharply defined as in my figures, inasmuch as there are no boundary lines, such as I have drawn, yet we can scarcely say that the "dorsal surface is feathered all over with larger feathers here and there." Again, as touching the "median apterion" (*apt. mesogastræi*). In my adult specimens this is certainly not "sparsely feathered," nor can it be said that the "median apterion does not . . . . commence until the carina sterni, ... its breadth being precisely that of the carina." The nestlings, however,—and the nearly ripe embryo—seem to support Beddard's statements; but in how far this is actually the case remains to be seen, inasmuch as it is an almost hopeless task to differentiate between down-feathers (*plumulæ*) and neossoptiles with anything like precision enough to settle the question, and hence this must be left for a further examination of freshly-killed specimens. It is quite possible that, these being small and probably semiplumous feathers, they have fallen out in the adult submitted to me. I do not find that the lateral ventral tracts unite with each other in front of the cloacal aperture, or that they are connected with the femoral tracts by scattered feathering.

In the nestling Beddard almost distinguishes between the neossoptiles and true nestling down-feathers (plumulæ), in that he remarks that the "down-feathers are more numerous" than in the adult.

Of the embryo it is stated that "on the dorsal surface the feathering appeared to be quite uniform, though sparse; there was no distinct spinal apterion." The figure accompanying this description was drawn from a stage apparently roughly corresponding to that of a 5–6-day chick embryo. From a specimen apparently a few hours older (Pl. XI. fig. 4), kindly furnished by Prof. A. Newton, I find an undoubtedly distinct spinal apterium, but, as I have already remarked, the precise form and limits of the pt. spinalis and pt. femoralis could not be positively determined. In justice to Mr. Beddard I should mention that this embryo was a better preserved specimen than that which he described.

Dr. Gadow describes the branches of pt. ventralis as gradually approaching each other, and at the same time decreasing in width, whilst, according to my specimens, the branches do not decrease, but *increase* as they approach the cloacal aperture. I have not found anything to support the statement that much of the down upon the apteria has become transformed into filoplumes. The actual number of cubital remiges is 11, not 9.

In conclusion I wish to tender my thanks to Dr. Sclater for having so kindly entrusted me with this investigation, and to express a hope that ere long fresh material will come to hand, so as to enable us to set at rest one or two little matters of detail that I have been unable to settle with certainty in the present paper.

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EXPLANATION OF THE PLATES.

(All the figures are original.)

Plate IX.

Fig. 1.—Dorsal aspect of an adult *Opisthocomus*, showing the arrangement of the pterylæ. The shaded parts represent the apteria. The relative sizes of the feathers are indicated by large and small dots.

Apt.a.sup.	Apterium alæ superius.
Apt.cap.	„ capitis.
Apt.t.lat.	„ trunci laterale.
Apt.sp.	„ spinale.

Pt.c.	Pteryla caudalis.
Pt.cap.	„ capitis.
Pt.coll.	„ colli.
Pt.cr.	„ cruralis.
Pt.f.	„ femoralis.
Pt.h.	„ humeralis.
Pt.sp.	„ spinalis.
Pt.u.	„ uropygii.
P.	Parapteron.
U.	Uropygium.

Fig. 2.—Ventral aspect of same, showing the arrangement of the pterylæ. The shaded parts represent apteria.

Additional Letters.

Apt.t.lat.	Apterium trunci laterale.
Apt.m.	„ mesogastræi.
Pt.a.	Pteryla ani.
Pt.v.	„ ventralis.
St.cal.	Sternal callosity.

Fig. 3.—Right-side view of same. The shaded parts as before.

Additional Letters.

Apt.a.inf.	Apterium alæ inferioris.
H.	Hypopteron.

PLATE X.

Fig. 1.—Dorsal aspect of a nestling *Opisthocomus cristatus*, showing the arrangement of the pterylæ. The shaded parts represent the apteria

Letters as in Plate IX.

Fig. 2. Ventral aspect of the same. The very small dots are intended to indicate approximately the distribution of the plumulæ or down-feathers.

Um. Umbilicus. Other letters as in Plate IX.

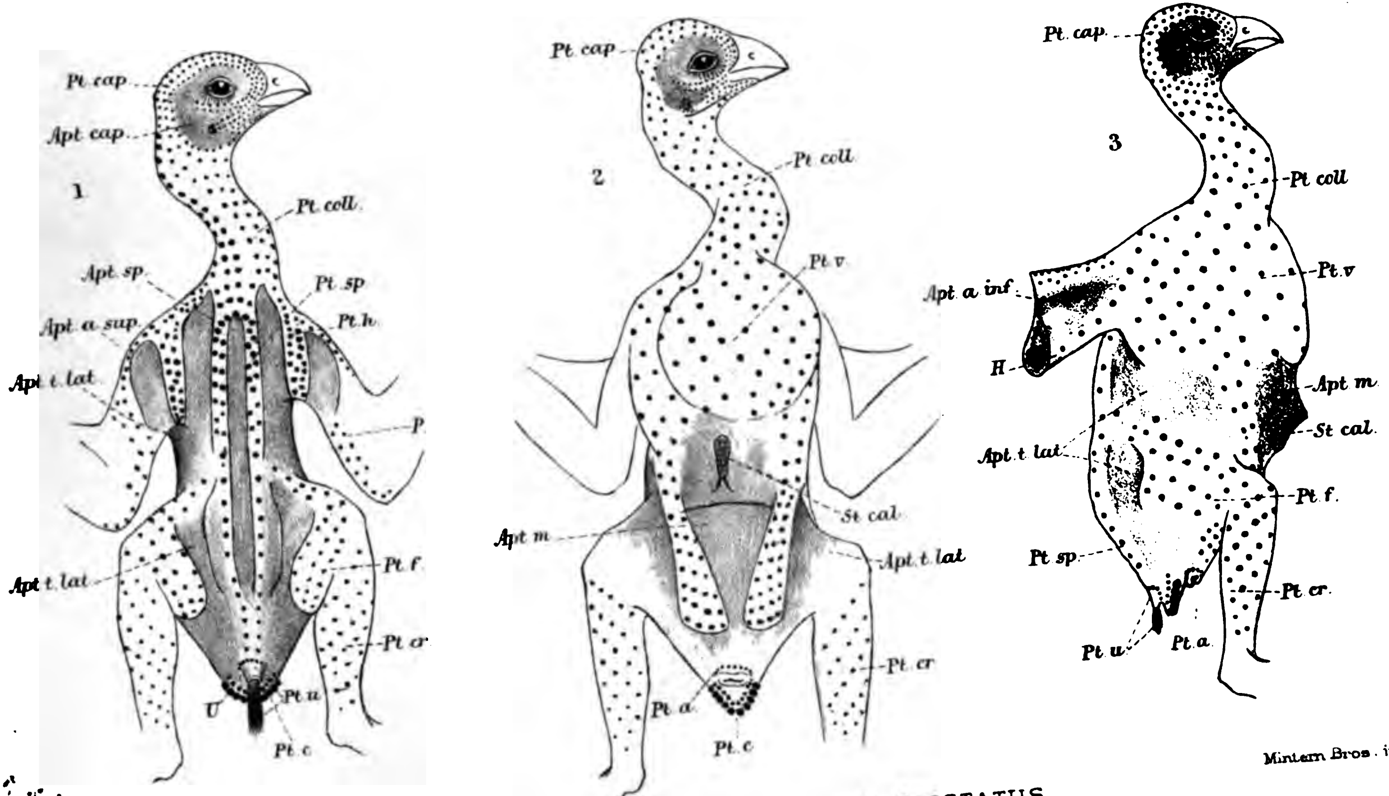
Fig 3. Right side of the same. The small dots, as in fig. 2, indicate the distribution of the plumulæ

Letters as before.

PLATE XI.

Fig. 1.—Left wing of a nestling of the Common Fowl, dorsal view, showing how, whilst the development of the proximal metacarpo-

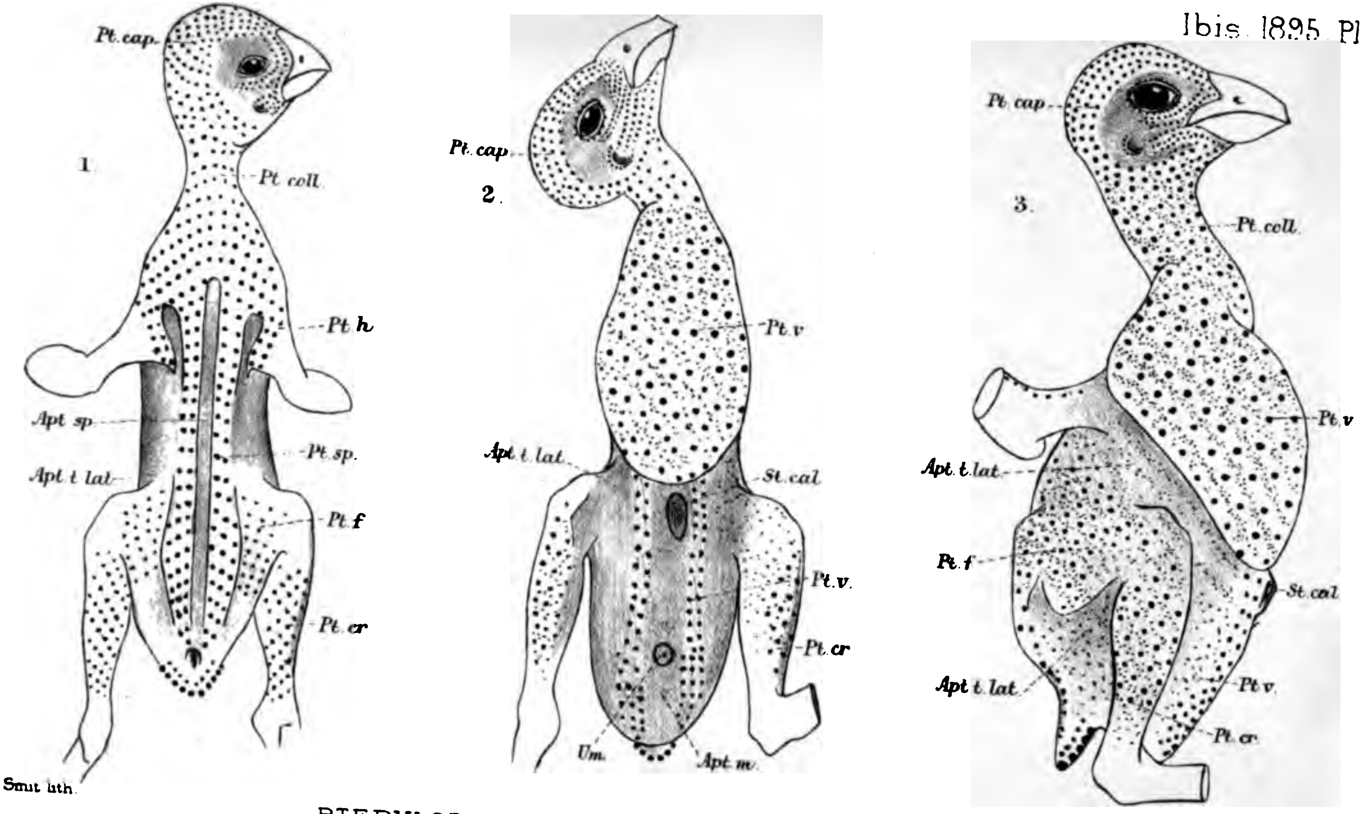
Ibis. 1895. Pl. IX.



Mintern Bros. imp.

J. P. Smit lith.

PTERYLOSIS OF OPISTHOCOMUS CRISTATUS.

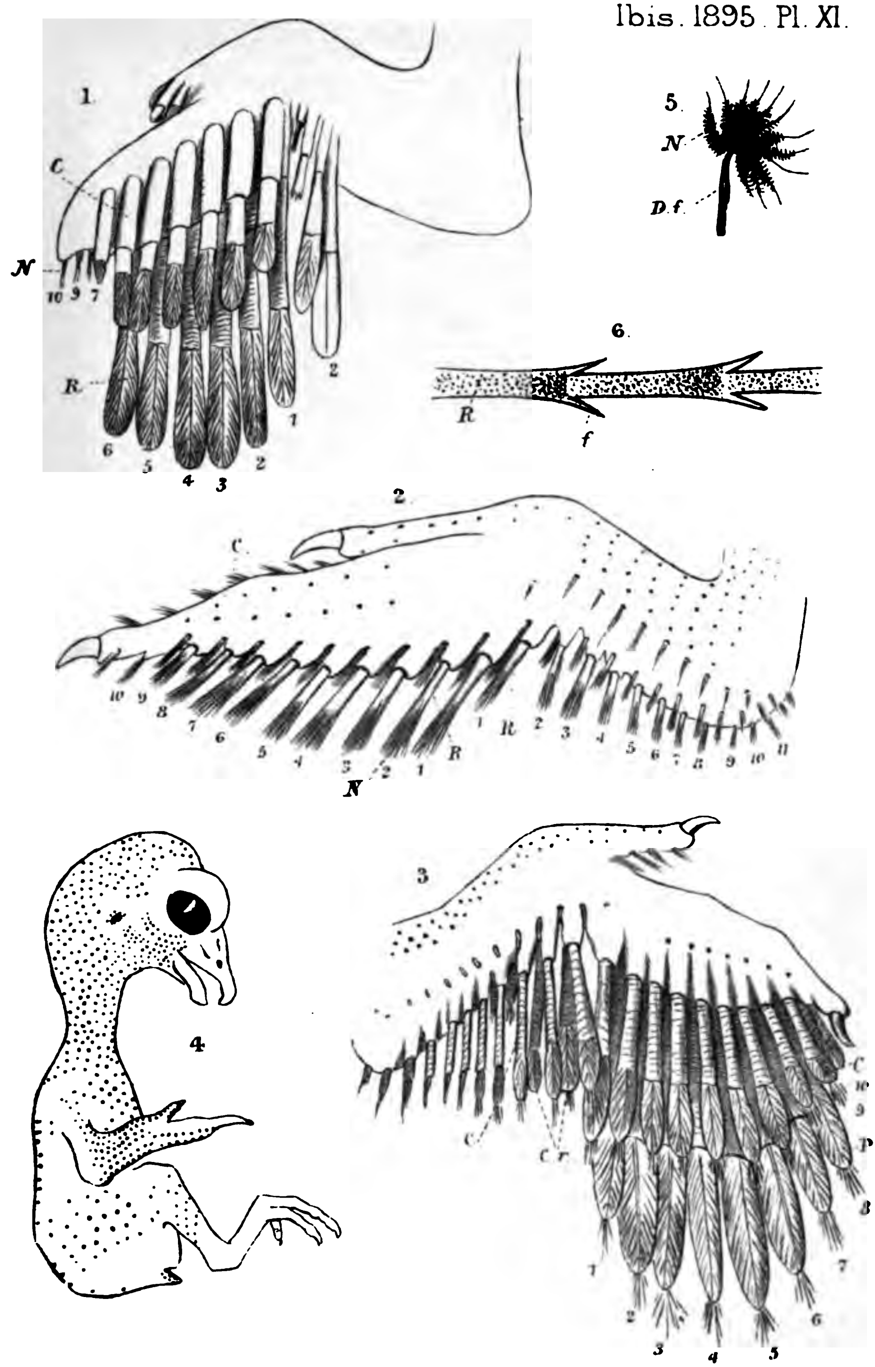


W. P. del. P. Smit lith.

PTERYLOSIS OF OPISTHOCOMUS CRISTATUS.

Mintern Bros. imp.

Ibis. 1895. Pl. XI.



W.P. del. P. Smit lith.

Mintern Bros. imp.

PTERYLOSIS OF OPISTHOCOMUS CRISTATUS

digital (primary) remiges (*R.*) has become much accelerated, that of the distal remiges (*N.*) has been arrested *pro temp.*, thus leaving a free finger-tip, sometime functional in the past history of the species.

C. Coverts. *N.* Neossoptiles.

Fig. 2.—Left wing of a nestling *Opisthocomus*, showing the arrested development of the distal remiges, leaving a free finger-tip, functional at the present day, enabling the bird to climb before the power of flight is acquired.

Fig. 3.—Right wing of a nestling *Opisthocomus*, older than that represented in fig. 2. Here the finger-tip has almost, if not quite, ceased to be functional; the primaries being now capable of sustaining flight.

C. Coverts. *C.r.* Cubital remiges. *P.* Primaries.

Fig. 4.—Embryo *Opisthocomus*, showing the feather-papillæ, the "fundaments" of the future definitive feathers.

Fig. 5.—A neossoptile (*N.*) of *Opisthocomus* on the tip of a definitive feather (*D.f.*), natural size.

Fig. 6.—Portions of a radius (*R.*) of fig. 5, highly magnified, showing fila (*f.*).

XXIX.—*Further Notes on Birds from Bugotu, Solomon Islands, with Description of a new Species.* By H. B. Tristram, D.D., LL.D., F.R.S.

I have lately received, through my friend Dr. P. H. Metcalfe, of Norfolk Island, a small additional collection of birds made for me by Dr. Welchman on Bugotu, one of the lesser islands of the Solomon group*. The collection consists of 14 specimens referable to 12 species, some of which are of considerable interest, though many are well known. The native names are attached to the specimens, and these, except in one or two instances, bear little resemblance to the names given in Guadalcanar, which again differ altogether from those of Shortland Island (see P. Z. S. 1888, p. 187). I subjoin the list:—

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* See previous paper, Ibis, 1894, p. 28.

1. NINOX JACQUINOTI (Hombr.*).
Native name "Duru."

♀ & *jr.* The mature bird agrees perfectly in all respects with the descriptions of the type, with the exception that a few of the flank-feathers have a very fine hair-like streak down the centre. It cannot possibly be mistaken for any other member of the genus. The young specimen, though it has the back and wings distinctly barred, has not yet lost the down on the head and breast. This species can be at once distinguished from *Ninox granti* by the close and continuous bars on the mantle and whole upper surface, and by the total absence of any trace of bars on the lower parts or on the flanks. I am unable to ascertain whether any other specimens than the type in Paris have as yet been obtained.

2. ECLECTUS PECTORALIS (P. L. S. Müller). ♀.
Native name "Kilio."

3. EURYSTOMUS SOLOMONENSIS, Sharpe.
Native name "Kekero."

4. MACROPTERYX MYSTACEA (Less.).
Native name "Kii."

5. RHIPIDURA TRICOLOR (Vieill.).
Native name "Riuriugabe."
Two specimens.

6. ZOSTEROPS METCALFII, mihi.
Native name "Kuukudu."

7. GRAUCALUS ELEGANS, Rams. ♂.
Native name "Usi."

8. MACROCORAX VEGETUS, mihi. ♂.
Native name "Aoao."

A second specimen of this giant representative of *M. woodfordi* described by me, 'Ibis,' 1894, p. 30. The bill in this specimen is suffused with pink, as noticed by Mr. Grant in some instances in the other species.

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* Apparently the same as *Athene tæniata*, Jacq. & Puch. I must leave it to Count Salvadori and Dr. Sharpe to settle the question of priority.

9. MINO KREFFTI (Sclat.).

Native name "Kikiloa."

10. CALORNIS MAXIMA, sp. nov.

C. corpore toto nigro: capite et collo purpureo-nitentibus, plumis colli, interscapulii, et pectoris lanceolatis: tergo toto, tectricibus remigum, et caudâ nitore metallico viridi resplendentibus: remigibus pallidè fuscis, nec basin versus nigricantibus, pogonio externo pallidioribus: rectricibus nigerrimis: rostro et pedibus nigris. Long. tot. 12·6 poll., alæ 6·5, caudæ 4·75, rostri a rictu 1·1, tarsi 1·55.

Native name "Cheu."

This is certainly the giant of the group, its dimensions considerably exceeding those of *Aplonis atrifusca* from Samoa. Its bill is proportionately more massive than that of any other species. In its general coloration, especially in the purple gloss of the head and neck and in the black tail, it generally resembles *C. magna*, but the wings are a very much paler brown than in that species, or in the still more diminutive *Sturnoides minor* of Ramsay, in which the tail as well as the wings is brown. It is remarkable that both this giant representative of the Sturnidæ and the giant *Macrocorax vegetus* should as yet have been found only on the little island of Bugotu, while represented in the islands on either side of it by smaller species.

I may here notice an extraordinary oversight on the part of Dr. Sharpe. In Cat. Birds, vol. xiii. p. 142, he gives *Calornis minor* (Bp. ex Müll. Mus. Lugd.), the well-known Timor species, as No. 4 of the genus, and immediately afterwards (p. 151) he repeats *Calornis minor* (Ramsay) as No. 10 of the same genus! The error is repeated in the Systematic Index, p. x. There is also an error in Dr. Sharpe's reference to Salvadori, "Orn. Pap. iii. p. 500," where we should read "550." But Salvadori retains Müller's name, *Calornis minor*, for the Timor species, assigning the Solomon Island species to his genus *Lamprocorax* with a query. Dr. Sharpe also states that his *C. minor* is "similar to *C. grandis*, but much smaller." The marked specific difference is that the tail is jet-black in the larger, uniform brown in the smaller species. Of the latter I was the first describer (Ibis, 1882, p. 137), but erroneously identified it with *L. fulvipennis* (Hombr. & Jacq.), of which I had not seen the type. Clearly *Calornis minor* (Sharpe No. 2) cannot stand, and I therefore propose for it the name *Calornis dichroa* = *Sturnoides minor*, Rams. = *C. fulvipennis*, Tristr. (nec Jacq. & Puch.).

11. NYCTICORAX MANDIBULARIS, Grant.
Native name "Kopi."

This specimen agrees with the type in wanting the white feathers of the crest, though otherwise fully adult.

12. TRINGOIDES HYPOLEUCUS (L.).
Native name "Churi."

XXX.—*Bulletin of the British Ornithologists' Club.*

Nos. XXV.–XXVII.

No. XXV. (March 30th, 1895.)

THE twenty-fourth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 20th of March, 1895.

Chairman: HOWARD SAUNDERS.

Members present:—E. BIDWELL, J. L. BONHOTE, W. E. DE WINTON, ERNST HARTERT, W. R. OGILVIE-GRANT, H. J. PEARSON, FRANK PENROSE, R. BOWDLER SHARPE (*Editor*), G. E. SHELLEY, C. A. WRIGHT.

Visitors: C. E. FAGAN, FREDERICK GILLETT, C. B. RICKETT.

The CHAIRMAN read extracts of letters received from Mr. P. L. SCLATER, relative to birds observed on his excursion to Egypt. It was remarked that all the Gulls seen on the passage out and the Egyptian Kites on the Nile alike carried their feet straight out under the base of the tail.

Mr. Howard Saunders made some remarks upon the Skimmers (*Rhynchopinæ*), with special reference to the species found in America. After studying the specimens in the collection of the Natural History Museum, he found three forms which he considered to be specifically distinct. Of these, *Rhynchops nigra* has a nearly white tail, a broad pure white alar band, conspicuously white parapteral feathers, and white under wing-coverts; it inhabits the temperate and tropical east coast of North America. *R. melanura* has dark brown rectrices, with very narrow pale borders to the outer webs, a slight alar band of dull white, shows no white on the parapteral feathers, and has smoke-coloured under wing-coverts; it inhabits the great rivers of South America which drain from the Andes (ascending to the cataracts), and also the Pacific coasts of Chile, Peru, and Ecuador. On the coast of South Brazil and Argentina, ascending the Paraná and Paraguay to their head-waters, is found a species which chiefly resembles the northern *R. nigra*, but differs from it in having a smaller alar band, and the rectrices chiefly brown, with broad white edges to the outer webs. This he proposed to call

Rhynchops intercedens, sp. n.

♂. Similis *R. nigræ*, sed fascia alari alba angustiore, et rectricibus præcipuè brunneis, latè albo marginatis distinguenda. Long. tot. 18 poll., alæ 15·25.

The Hon. Walter Rothschild sent for inspection a new species of Bower-bird, which he characterized as follows:—

Æluroedus jobiensis, sp. nov.

This species is nearest to *Æ. melanocephalus*, Ramsay, from British New Guinea, but shows sufficient differences to justify its separation. The head is black, uniformly spotted with buffish yellow, and does not show the black band on the sides of the occiput, so conspicuous in *Æ. melanocephalus*. Upper neck and back brownish buff, with black margins. Ear-coverts consisting of the large patch of bristly feathers found in its three nearest allies, but this patch passes straight into the black of the throat, without any marked area of pale feathers surrounding it, as in *Æ. melanotis*, *Æ. melanocephalus*, and *Æ. arfakianus*. The pale spots on the tips of the wing-coverts not very distinct, and of a dusky buff colour. Throat, breast, and uppermost part of abdomen black, with a small central buff spot in each feather, while in *Æ. melanotis* (from the Aru Islands) and *Æ. melanocephalus* these feathers are buff or whitish, with narrow black borders. The breast is much greener in *Æ. arfakianus* from Mt. Arfak. Lower abdomen and under tail-coverts buff with dusky margins, shaded here and there with green. In all other respects most similar to *Æ. melanocephalus*, but the feathers on the sides of the neck just behind the ear-coverts are almost uniform buff, having nearly lost their dark margins. Culmen 1·5 inch, wing 6·5, tail 5·4, tarsus 1·65.

Hab. Island of Jobi, New Guinea, where it was procured by the hunters of the late Mr. Bruijn. Type in Rothschild Museum.

Mr. OGILVIE-GRANT exhibited skins of some rare Francolins collected at Nassa, on the south-eastern shore of the Victoria Nyanza. One of these was *Pternistes rufopictus*, Reichen., a remarkably handsome species, belonging to the bare-throated group of Francolins. A second species was new to science, and he proposed to call it

FRANCOLINUS HUBBARDI, sp. n.

♂. Similis *F. coqui*, Smith, sed gastræo toto concolore, pallidè fulvo, minimè nigro transfasciato.

♀. Præpectore ferè griseo, minimè rufescente distinguenda.

Long. tot. 10 poll., alæ 5·6, caudæ 2·6, tarsi 1·6.

Mr. OGILVIE-GRANT also described a new species of *Rhizothera*, from examples in the British Museum, as

RHIZOTHERA DULITENSIS, sp. n.

♂. Similis *R. longirostri*, sed præpectore et pectore totis griseis, gastræo reliquo albicante: pedibus schistaceis. Long. tot. 13 poll., alæ 7·7, caudæ 3, tarsi 2·25.

♀ *ad.* Similis *R. longirostri* ♀, sed tectricibus alarum ferè saturatè brunneis, maculis fulvescentibus rarioribus distinguenda.

Hab. Mt. Dulit, Sarawak, 4000 feet (*C. Hose*).

The describer pointed out that the true *R. longirostris* is also found in Borneo, as examples had been obtained by Mr. Alfred Everett at Marup and Busan in Sarawak. These specimens are identical with others from the Malay Peninsula and Sumatra, and it is evident that *R. dulitensis* is a mountain-form of *R. longirostris*.

Capt. G. E. Shelley called attention to the fact that *Crithagra rendalli* of Tristram, recently described in the 'Ibis,' was, in all probability, the same as *C. crassirostris* of Peters, described from Mozambique. Peters published only a short and somewhat vague description of the latter species; but, while agreeing with Dr. Bowdler Sharpe that *C. mosambica*, described by Peters at the same time, was referable to *C. ictera*, Capt. Shelley thought it hardly likely that he would have described the latter species twice over in the same paper. A comparison of the types was desirable, and the attention of Dr. Reichenow was called to this suggestion.

Mr. W. E. De Winton exhibited some very large specimens of the Common Guillemot (*Uria troile*) which had been obtained off the Yorkshire coast during the recent severe weather, and Mr. Ogilvie-Grant also drew attention to a singularly large individual procured near Cromarty, N.B.

Mr. H. J. Pearson brought for exhibition some clutches of the eggs of the Harlequin Duck (*Cosmonetta histrionica*), the Long-tailed Duck (*Harelda glacialis*), and the Red-necked Phalarope (*Phalaropus hyperboreus*), procured by him during the past summer in Iceland. The eggs of the Ducks were beautifully arranged on the down; a method of exhibition much admired by the Members present.

Mr. F. Gillett made some remarks on his recent travels through Somali-land to the Galla country, when he accompanied Dr. Donaldson Smith's expedition.

Dr. Bowdler Sharpe announced that the first collections from Dr. Donaldson Smith's expedition had just arrived in

this country, and that several of the species of birds represented in them appeared to be new to science. Among them were the following :—

Cossypha donaldsoni, sp. n.

C. similis *C. subrufescenti*, Bocage, sed saturatius schistaceus, et rectricibus externis concoloribus, haud schistaceo marginatis distinguenda. Long. tot. 6·8 poll., alæ 3·1.

Dryodromas smithi, sp. n.

D. similis *D. rufifronti* (Rüpp.), sed rectricum externarum pogoniis externis omnino albis distinguenda. Long. tot. 4·8 poll., alæ 1·8.

Cisticola dodsoni, sp. n.

C. similis *C. subruficapillæ*, sed pileo castaneo concolore, et aspectu externo remigum minimè rufescente distinguenda. Long. tot. 3·4 poll., alæ 1·7.

Mirafra gilletti, sp. n.

M. similis *M. næviæ* et *M. sabotæ*, sed uropygio et supracaudalibus schistaceo-griseis, et rectricibus angustè arenario fimbriatis facilè distinguenda. Long. tot. 6 poll., alæ 3·4.

Caprimulgus donaldsoni, sp. n.

C. similis *C. fervido*, Sharpe, sed minor, torquibus cervicali et præpectorali latè castaneis, maculis magnis ochraceofulvis conspicuè marmoratis distinguendus. Long. tot. 7·8 poll., alæ 5·2.

No. XXVI. (April 30th, 1895.)

The twenty-fifth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 17th of April, 1895.

Chairman: P. L. Sclater, F.R.S.

Members present:—E. Bidwell, H. J. Pearson, F. Penrose, Howard Saunders (*Treasurer*), W. L. Sclater, R. Bowdler Sharpe (*Editor*), W. B. Tegetmeier, Major Horace Terry, Aubyn Trevor-Battye, John Young.

Visitors: J. W. Castle, H. Stevens, Prof. Traquair, W. F. Urwick.

Mr. Sclater gave a short account of the tour he had recently made up the Nile from Cairo to Wadi Halfeh and back. Travelling by the post-steamer, he had been unable to make collections, but with the aid of field-glasses had identified examples of about 50 species of birds. In February above the First Cataract many birds were already breeding, although the ordinary migrants from the south had not yet arrived. Young Hoopoes and Wheatears fully fledged were offered for sale by the natives. A nest and two eggs of the Pale Crag-Swallow (*Cotile obsoleta*) had been taken from a ledge in the smaller temple at Abou Simbel. The necessity for a new edition of Shelley's 'Birds of Egypt' was insisted on.

Mr. Bidwell exhibited, by permission of Mr. H. Stevens, a handsome specimen of the egg of the Great Auk (*Alca impennis*), from the collection of Sir F. Milner. The specimen was especially remarkable for the "pitted" nature of the shell.

Mr. Stevens showed a large photograph of the Great Auk, taken from a specimen in Sir F. Milner's collection, which had been remounted by Mr. Cullingford of Durham, and which was considered to be one of the finest known specimens of this bird.

Dr. Bowdler Sharpe brought some specimens of birds from the collection recently made by Dr. Donaldson Smith, during his expedition from Somali-land to Lake Rudolf. In addition to those species described at the last Meeting of the Club, Dr. Sharpe exhibited examples of the following new species:—

Turacus donaldsoni, sp. n.

T. pileo antico viridi, postice pallidè coccineo, et maculâ magnâ anteoculari albâ distinguendus. Long. tot. 16·5 poll., alæ 7·2.

Hab. Meo.

LOPHOCEROS SIBBENSIS, sp. n.

L. similis *L. deckeni*, tectricibus alarum nigris, minimè albo maculatis, sed statura minore et rostro toto nigro distinguendus. Long. tot. 15 poll., alæ 6·3.

Hab. Sibbe.

Mr. A. TREVOR-BATTYE exhibited a curious white variety of a Brent Goose, which he had procured at Kolguev Island, and gave an account of the mode of capture of these Geese by the Samoyedes.

Dr. BOWDLER SHARPE referred to the loss which the Club had recently sustained, by the death of its esteemed member, Mr. Edward Hargitt, and gave an account of his life and work, with especial reference to the series of paintings of Woodpeckers which Mr. Hargitt had executed for his proposed 'Monograph of the *Picidæ*.' These paintings were 1300 in number, and had taken twelve years in execution. They comprised portraits of every type submitted to him, and of every variation in plumage which existed in his own collection of Woodpeckers, and in those of other public and private Museums to which the deceased artist had had access.

On the motion of the Chairman, a letter of condolence with Miss Hargitt, who had been for many years his faithful coadjutor in this preparation for his 'Monograph,' was passed by the Meeting.

No. XXVII. (May 31st, 1895.)

THE twenty-sixth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 22nd of May, 1895.

Chairman : P. L. SCLATER, F.R.S.

Members present :—E. BIDWELL, W. E. DE WINTON, J. GERRARD, Col. H. W. FEILDEN, Major A. P. LOYD, R. NESHAM, W. R. OGILVIE-GRANT, H. J. PEARSON, C. E. PEARSON, FRANK PENROSE, DIGBY PIGOTT, C.B., R. H. READ, Capt. SAVILE G. REID, HOWARD SAUNDERS (*Treasurer*), HENRY

Seebohm, R. Bowdler Sharpe (*Editor*), E. Cavendish Taylor, A. Trevor-Battye, Col. Yerbury, John Young.

Visitors: Dr. Cotman, J. H. Fleming (Toronto), Edward Haggard, H. Stevens, R. Warren.

Mr. W. R. Ogilvie-Grant gave an account of his recent expedition to the Salvage Islands, between the Canaries and Madeira, and exhibited specimens of some of the most interesting of the species obtained by him; among these were examples of *Pelagodroma marina* and *Oceanodroma cryptoleucura* (see Wils. & Evans, Aves Hawaienses, part iv.).

Col. Yerbury gave some details of his visit to Aden during the past winter, when he had been successful in identifying several species of birds which had previously been undetermined.

Mr. Henry Seebohm exhibited and made remarks on some specimens of *Pseudototanus guttifer* and *Eurhinorhynchus pygmæus*, recently received by him in a collection from the mouth of the Amoor River.

Mr. E. Lort Phillips sent for exhibition specimens of new species of *Merula* and *Corvus* from Somaliland. These two species had been discovered during the past winter spent by him in that country. These he proposed to call

Merula ludoviciæ, sp. n.

Similis *M. simillimæ* et *M. nigropileo* ex peninsulâ Indicâ, sed facie laterali et gutture toto nigerrimis facile distinguenda. Long. tot. 8·3 poll., culm. 0·8, alæ 4·65, caudæ 3·9, tarsi 1·2.

Corvus edithæ, sp. n.

C. similis *C. corone*, sed minor, et corporis plumis ad basin dimidiatim purè albis, alis minimè viridi nitentibus sed purpurascenti-chalybeis distinguendus. Long. tot. 16·5 poll., culm. 1·95, alæ 12·4, caudæ 6·2, tarsi 2.

Mr. Bidwell exhibited an old model of a Great Auk's egg, believed to have been made in France about the year 1853, and undoubtedly one of the first models ever made.

It was a copy of one of the eggs formerly in the possession of the late T. H. Potts, and purchased by the late Lord Garvagh at Stevens' Auction Rooms on May 24th, 1853, for £30.

Dr. Bowdler Sharpe made some remarks on the interesting collection of birds brought by Colonel Yerbury from the neighbourhood of Aden, a full account of which will appear in 'The Ibis.' Special attention was drawn to the specimens of *Argya* and *Myrmecocichla*. The former had been alluded to by Lieut. Barnes (Ibis, 1893, p. 180) as *Argya*, sp. inc., and it was therefore interesting to find that it was the true *A. squamiceps* (Cretzschm.), though this was to have been expected. On comparing the Palestine bird usually called *A. squamiceps*, it proved to belong to a different species, and a mistake had been made in the 'Catalogue of Birds,' vol. vii. p. 395, in uniting the two. The Palestine bird should be kept distinct as *Argya chalybea* (Bp.).

Another instance of a difference between Palestine and Arabian forms was seen in the case of *Myrmecocichla melanura*. Colonel Yerbury's specimens from Aden agreed with others from Abyssinia and Somaliland; but the Palestine form, hitherto believed to be *M. melanura*, was distinct, and Dr. Sharpe proposed to call it

Myrmecocichla yerburyi, sp. n.

Similis *M. melanuræ*, sed pallidè cinerea, gutture et pectore dilutè cinereis, minimè vinaceo lavatis distinguenda. Long. tot. 6 poll., culmen 0·55, alæ 3·15, caudæ 2·35, tarsi 0·8.

Hab. in Palestinâ.

A communication from the Hon. Walter Rothschild pointed out that the generic name of *Drepanorhynchus*, proposed by Dr Dubois for a new genus of *Fringillidæ*, containing some species hitherto referred to *Spermophila* (cf. Mem Soc Zool France, vii. 1894, p. 400), was not admissible. The generic name *Drepanorhynchus* had been already employed by Dr Reichenow for a Sun-bird from the Kilimanjaro district in East Africa, and Mr Rothschild therefore proposed to substitute the name *Spermophilopsis* nom emend.) for the *Drepanorhynchus* of Dr. Dubois. The three species belonging to *Spermophilopsis* would be *S. schistaceus* (Dubois), *S. falcirostris* (Temm.), and *S. superciliaris* (Pelz.).

Mr. Rothschild also sent to the Meeting the following note:—"A few weeks ago I received from Mr. Travers a couple of specimens of *Sterna vittata*, Gm., shot in February on the Bounty Islands, to the south-east of New Zealand. There can be no doubt as to the identification of the species, as Mr. Howard Saunders and Mr. Hartert have compared the birds with specimens of *S. vittata* in the British Museum, and I think that this interesting new locality for a rare Antarctic bird is worth recording."

XXXI.—*Notices of recent Ornithological Publications.*

[Continued from p. 293.]

63. *Andrews on some Remains of* Æpyornis.

[On some Remains of *Æpyornis* in the Hon. Walter Rothschild's Museum at Tring. By C. W. Andrews, F.Z.S. Nov. Zool. ii. p. 23.]

The remains described were collected at Itampulu Vé, on the coast north of St. Augustine's Bay, in S.W. Madagascar. A large left tarso-metatarsus and two right femurs are referred provisionally to *Æ. titan*, as is also a distal portion of a left tibio-tarsus of great size. A metatarsus of a different form is believed to be that of *Mullerornis rudis*, Milne-Edw. & Grand., being distinguished by the presence of a completely ossified bony bridge over the lower end of the groove for the adductor of the outer digit. This character necessitated the creation of a new genus, proposed to be called *Flacourtia*.

64. *Annals of Scottish Natural History.* Nos. 13 & 14, 1895.

The chief ornithological feature of No. 13 is an interesting article by Mr. J. A. Harvie-Brown on the distribution and increase of the Starling in Scotland, illustrated by a useful coloured map. The author points out that *Sturnus vulgaris* has been a resident in the Shetlands, Orkneys, and Outer Hebrides from time immemorial, and has inhabited the north-eastern portion of Caithness since 1791, but that over the rest of the mainland of Scotland its distribution has been sparse, or subject to remarkable fluctuations, until comparatively recent times. To this essay Mr. Robert Service contributes a supplement in No. 14, giving further details of the arrival of the Starling in the Solway district, where the bird was rare, even in 1863, as a breeder, and he alludes to the row of spikes driven into the wall of Lincluden Abbey by John MacKenzie in May 1842, in order to reach the nest of this great rarity. Mr. W. Eagle Clarke has a valuable article, also illustrated by a map, on the recent visitation of the Little Auk (*Mergulus alle*) to Scotland, and in both of the numbers are records of several rare or interesting occurrences in North Britain. In our former notice, by a slip of the pen, we remarked that Mr. Clarke had shown the probability of the Hawfinch having bred in Berwickshire: it should have been in *Midlothian*.

65. '*Aquila.*' *A New Journal of Ornithology.*

[Aquila. A Magyar Ornithologiai Központ Folyóirata. Redact. Herman Ottó. I. Nos. 3, 4 (1894).]

'Aquila' (as already announced, see 'Ibis,' 1894, p. 553) is the title of the new journal of ornithology published at Budapesth as the organ of the Hungarian Ornithological Centre. The present part commences with a short biography of Samuel Fenichel, a zoological collector, who lately lost his life in the Finisterre Mountains in New Guinea. Various interesting extracts from his last letters are added, and a list of the birds which he collected during his short career in New Guinea. These were altogether 95 in number, amongst which three were new to science, namely, *Arses fenicheli*, *Donacicola sharpii*, and *Pœcilodryas hermani*. The *Arses* is described here, the other two have already been characterized by Dr. Madarász (see Bull. B. O. C. iii. p. xlvii).

Many other interesting articles will be found in the present number of 'Aquila,' which we cordially recommend to the notice of the members of the B. O. U. A coloured plate (tab. i.) contains excellent figures (by Keulemans) of *Donacicola sharpii* and *Pœcilodryas hermani.* We trust that our new contemporary may long continue to flourish, and wish it all success.

66. *The Auk.* January and April, 1895.

Passing over some pleasant descriptive articles of comparatively local interest, we come to an account of *Porzana cinereiceps* as observed in Nicaragua by Mr. C. W. Richmond, with remarks on allied species; and Mr. G. H. Mackay describes the breeding-haunts of the Terns &c. on Muskegett Island, Massachusetts. Mr. A. W. Anthony describes as a new species *Thryothorus leucophrys,* from the island of San Clemente, 75 miles from the mainland of California, and as a new subspecies *Harporhynchus cinereus mearnsi,* from Lower California. Dr. C. Hart Merriam gives an account of Leconte's Thrasher (*Harporhynchus lecontei*) as observed in the arid Colorado valley, and a plate of this bird forms the frontispiece to the January number. The April number begins with an article, illustrated by a coloured plate, on a remarkable rufous plumage of the Prairie-Hen (*Tympanuchus americanus*) by Mr. William Brewster. A new subspecies, *Fulmarus glacialis columba,* is described by Mr. Anthony, with remarks on the Fulmars of Southern California, and from the same pen comes the diagnosis of *Pipilo fuscus senicula,* subsp. nov., also from California.

Referring to a paper in 'The Auk' for 1889, Mr. F. A. Lucas remarks upon some additional characters of the Tree-Swifts of Malaysia (Macropterygidæ), illustrated by woodcuts. Mr. Brewster gives his reasons for distinguishing a new subspecies, *Empidonax trailii alnorum.* A seventh Supplement to the American Ornithologists' Check-list is supplied by the A. O. U.

67. *Blasius on the Birds of Malta and Gozo.*

[Ornis von Malta und Gozo, und den umliegenden Inseln, mit Beiträgen aus den ornithologischen Berichten der Leuchtthurmwächter von Dellimara und Giordan aus den Jahren 1886–1894. Von Professor Dr. R. Blasius. Ornis, viii. p. 139. 1895.]

Dr. R. Blasius has received for study the sets of observations made by the keepers of the lighthouses in Malta and Gozo on the birds that occurred at these stations in the nine years 1886–1894. From the writings of previous authorities on the birds of the Maltese group (Schembri, Wright, and Giglioli), he has compiled a new list of the avifauna, and has interpolated these observations under the heads of the species to which they refer. At its conclusion the ornis of Malta and its satellites is shown to comprise 282 species, besides 11 doubtful visitors. Of these only 12 are permanent residents, 7 are summer and 44 winter visitants, and 107 birds of regular passage. The remainder are of more or less irregular occurrence.

68. *Bolau on two Sea-Eagles.*

[Der Riesen-Seeadler und der Korea-Seeadler im zoologischen Garten in Hamburg. Von Dr. Heinr. Bolau. Zool. Garten, xxxv. p. 193.]

Dr. Bolau describes shortly and figures the two Giant Sea-Eagles now quite adult and living in the Zoological Garden at Hamburg—*Haliaëtus pelagicus* and *H. branickii*. Of the latter the Zoological Society of London have also a specimen, received in September 1893, still wholly black, so apparently not yet adult.

69. *Bourns and Worcester on new Philippine Birds.*

[Preliminary Notes on the Birds and Mammals collected by the Menage Scientific Expedition to the Philippine Islands. By Frank S. Bourns and Dean C. Worcester. Minnesota Ac. Nat. Sci. Occasional Papers, vol. i. no. 1, Minneapolis, 1894.]

Messrs. Bourns and Worcester were members of the celebrated "Steere Expedition" to the Philippines in 1887–88. Being convinced that much more remained to be done in this group of islands, they availed themselves of the liberality of Mr. L. F. Menage to enable them to carry out another expedition to the same country, and during two years and five months explored numerous islands of the Philippine group with great success. In 1893 they returned home, but, owing to the financial troubles of the U. S., have only recently been able to work out their materials. Mr. Everett's more recent researches have therefore in some cases obtained priority in publication.

Messrs. Bourns and Worcester now give us a preliminary account of their bird-collection, which is stated to contain more than 4000 specimens. The following 36 species are described as new:—

1. *Ninox spilonotus*, fr. Cebu, Sibayan, Tablas, and Mindoro.
2. *Phabotreron cinereiceps*, fr. Tawi-Tawi.
3. —— *brunneiceps*, fr. Basilan.
4. —— *maculipectus*, fr. Negros.
5. —— *frontalis*, fr. Cebu.
6. *Phlegœnas menagei*, fr. Tawi-Tawi.
7. *Batrachostomus menagei*, fr. ?
8. *Ceyx nigrirostris*, fr. Panay, Negros, and Cebu.
9. *Centropus steerii*, fr. Mindoro.
10. *Iyngipicus menagei*, fr. Sibuyan.
11. *Chibia menagei*, fr. Tablas.
12. *Oriolus cinereogenys*, fr. Tawi-Tawi.
13. —— *nigrostriatus*, fr. Negros and Masbate.
14. *Æthopyga arolasi*, fr. Tawi-Tawi and Sulu.
15. —— *bonita*, fr. Negros, Cebu, and Masbate.
16. —— *minuta*, fr. Mindoro.
17. *Dicæum pallidior*, fr. Cebu.
18. —— *sibayanica*, fr. Sibayan.
19. —— *intermedia*, fr. Romblon and Tablas.
20. —— *assimilis*, fr. Sula.
21. *Prionochilus æruginosus*, fr. Cebu and Mindanao.
22. —— *bicolor*, fr. Ayala.
23. *Zosterops siquijorensis*, fr. Siquijor.
24. *Hyloterpe winchelli*, fr. Panay, Masbate, and Negros.
25. —— *major*, fr. Cebu, Tablas, Sibuyan.
26. —— *mindorensis*, fr. Mindoro.
27. *Cryptolopha flavigularis*, fr. Cebu.
28. *Geocichla cinerea*, fr. Mindoro.
29. *Cittocincla superciliaris*, fr. Masbate.

30. *Ptilocichla minuta*, fr. Samar.
31. *Iole cinereiceps*, fr. Tablas, Ramblon.
32. —— *monticola*, fr. Cebu.
33. *Muscicapula samarensis*, fr. Samar.
34. *Rhipidura sauli*, fr. Tablas.
35. —— *albigularis*, fr. Negros and Guimaras.
36. *Rhinomyias ocularis*, fr. Sula and Tawi-Tawi.

The descriptions of these species is followed by a list of 226 others already known from the Philippines, which were obtained in new localities, and of two species not previously known from the Philippines, but now added to their avifauna.

Part iv. of this important memoir contains additional notes on species previously described. The authors unite *Polyplectron nehrkornæ* with *P. napoleonis*, and maintain that there is only one species of this genus in the Philippines (*i. e.*, in Palawan).

70. *Buller's Address on Darwinism, and other Papers.*

[Illustrations of Darwinism and other Papers. By Sir Walter L. Buller, K.C.M.G., D.Sc., F.R.S. Trans. New Zealand Inst. xxvii. p. 75.]

Sir Walter Buller reprints from the twenty-seventh volume of the 'Transactions of the New Zealand Institute' an address on Darwinism given to the Wellington Philosophical Society, and some other papers, principally relating to the birds of New Zealand and the adjacent islands. These will be found well worthy of perusal, and contain a large amount of information on recent discoveries in the avifauna of the Maorian subregion.

71. *Butler on Foreign Cage-Finches.*

[Foreign Finches in Captivity. By Arthur G. Butler, Ph.D., F.L.S., &c. Illustrated with sixty Plates, by F. W. Frohawk, F.E.S.; coloured by hand. Parts I.-III. 4to. London, 1894. L. Reeve & Co.]

Mr. Butler's book is intended to meet the wants of numerous bird-fanciers who keep foreign Finches as cage-birds, and wish to be able to distinguish them easily and to know something of their histories and habits. Mr. Butler commences with the Tanagers kept in captivity, which are few in number. Only four species are included in this work, but, as will be seen by reference to the Zoological Society's Lists, upwards of 30 have been exhibited in their Gardens, and some of them, such as the beautiful *Stephanophorus cæruleus*, might have been well added.

The Saffron Finches, Buntings, and Grosbeaks follow after the Tanagers, but we confess we do not quite understand Mr. Butler's classification of them.

Mr. Frohawk's nicely drawn plates represent the following species:—

Part I. *Calliste fastuosa*, *C. tatao*; *Euphonia violacea*; *Rhamphocœlus brasilius*; *Carpodacus erythrinus*; *Sycalis flaveola*; *Serinus canicollis*, *S. sulphuratus*.

„ II. *Serinus flaviventris*, *S. icterus*, *S. leucopygius*; *Alario alario*; *Chrysomitris icterica*; *Cyanospiza ciris*, *C. cyanea*; *Coryphospingus pileatus*, *C. cristatus*.

„ III. *Gubernatrix cristata*; *Paroaria capitata*, *P. larvata*, *P. cucullata*; *Cardinalis cardinalis*; *Spermophila albigularis*, *S. cærulescens*.

72. *Büttikofer on two new Paradise-birds.*

[On two new Birds of Paradise. By J. Büttikofer. Notes Leyden Mus. xvi. p. 161.]

Mr. Büttikofer describes two new Birds of Paradise, of which specimens have lately been presented to the Leyden Museum by Mr. J. Bensbach, late Resident at Ternate. He names them *Craspedophora bruiyni* and *Ianthothorax* (gen. nov.) *bensbachi*. The new genus is allied to *Craspedophora*. The Leyden Museum has also recently acquired a specimen of a third species, *Lamprothorax wihelminæ* Meyer, from the same locality.

73. *Büttikofer on the Immature Dress of* Microglossus.

[On the Immature Dress of *Microglossus aterrimus*. By J. Büttikofer. Notes Leyden Mus. xvi. p. 166.]

Mr. Büttikofer describes an abnormally coloured specimen of *Microglossus aterrimus*, which probably indicates the character of the young plumage of this Parrot.

74. *Dresser's Supplement to the 'Birds of Europe.'*

[A History of the Birds of Europe, including all the Species inhabiting the Western Palæarctic Region.—Supplement. By H. E. Dresser, F.L.S., F.Z.S., &c. Part I. January 1895; Part II. March 1895. 4to. London, 1895.]

Two parts of Mr. Dresser's long-promised supplementary volume on the birds of Europe are now before us. They contain figures of the following species from the facile and artistic pencil of Keulemans:—

Part I. *Turdus swainsoni*, *T. pallasi*, *T. alpestris*; *Saxicola seebohmi*, *S. vittata*, *S. albinigra*, *S. chrysopygia*, *S. picata*; *Pratincola caprata*, *P. dacotiæ*; *Ruticilla ochrura*, *R. erythronota*; *Erithacus hyrcanus*.
" II. *Daulias hafizi*; *Sylvia minuscula*, *S. althæa*, *S. mystacea*, *S. nana*; *Melizophilus deserticola*; *Phylloscopus neglectus*, *P. proregulus*; *Locustella straminea*; *Scotocerca saharæ*, *S. inquieta*; *Accentor fulvescens*, *A. atrigularis*; *Parus phæonotus*.

It will be seen that the supplementary species are issued in systematic order, and that the plates are consecutively numbered to follow those of the original work.

One of the most interesting birds figured is *Saxicola seebohmi* of Algeria, until recently known only from a single specimen. It has been lately rediscovered by Dr. Koenig. Under the name *Ruticilla ochrura* (Gm.), Mr. Dresser resuscitates an interesting eastern representative of the Black Redstart.

75. *Dubois on new or little-known Birds.*

[Sur quelques Oiseaux nouveaux ou peu connus. Par le Dr. Alph. Dubois. Mém. Soc. Zool. France, vii. p. 380.]

The following species are described as new:—*Spermophila ardesiaca*, ex Brasil; *Drepanorhynchus*[*] (gen. nov. Fringillid.) *schistaceus*, ex Brasil; *Oryzoborus torridus*, var. *major*, ex loc. ign.; *Nemosia fuscicapilla*, ex Brasil. Remarks are given upon other species (e. g. *Tinamus blasii*, Bp., and *T. peruvianus*, Bp.) in the Brussels collection.

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[*] See above, p. 384.

We must say that we doubt the advisability of describing old specimens of Passerine birds from unknown localities, or even from such a vague locality as "Brazil," as types of new species. It is almost impossible for other workers to identify them again.

76. *Elliot's 'Monograph of the* Pittidæ.'

[A Monograph of the *Pittidæ*, or Family of Ant-Thrushes. By D. G. Elliot, F.R.S.E. &c. Parts IV. & V. Folio. London, 1894–95. Quaritch.]

With these two parts Mr. Elliot completes the second edition of his 'Monograph of the Pittidæ,' of which the first edition was finished in 1863. The present edition contains 47 plates, some of which had already been used in the former edition. Of the new illustrations, at any rate, we can speak in unqualified terms, and we think the author would have done better to have had all the old ones redrawn.

Mr. Elliot proposes the new name *Pitta granatina borneensis* for what we should call *Pitta granatina*, for we are by no means convinced that Temminck's term "*granatina*" (as Mr. Elliot has endeavoured to show) was based on a Malaccan specimen.

The following species are figured in these two parts :—

Part IV. *Eucichla boschi*; *Pitta granatina*, *P. granatina borneensis*, *P. méfoorana*, *P. cæruleitorques*, *P. atricapilla*, *P. cyanea*, *P. brachyura*, *P. baudi*, *P. erythrogastra*.
„ V. *Pitta strepitans*, *P. mackloti*, *P. vigorsi*, *P. palliceps*, *P. nympha*, *P. cyanota*, *P. oreas*, *P. forsteni*, *P. propinqua*, *P. soror*, *P. inspeculata*.

77. *Finsch on the Water-Ouzel.*

[Zum Schutze des Wasserschwätzers (*Cinclus aquaticus*). Von Dr. O. Finsch. Zeitsch. f. Fischerei, 1894, Heft 4.]

Dr. Finsch issues an appeal for the protection of the Water-Ouzel, which we trust will meet with sympathy in this country as well as on the continent. Why this most useful and engaging bird should be persecuted we cannot understand; yet in some districts, we are told, a price is set on its head, and in Baden, it is stated, 632 of these unfortunate birds were slain in one year.

78. *Godman and Salvin's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana: or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman and Osbert Salvin. (Zoology.) Parts CXX.-CXXII. 4to. London: 1895. Published for the Editors by R. H. Porter, 18 Princes Street, Cavendish Square, W.]

Since we last mentioned the progress of this great work (above, p. 281) three further portions of the section "Aves" have been issued. In these the authors commence and finish the Pici and begin the Coccyges. *Melanerpes wagleri* is proposed as a new name for what Hargitt has called *M. tricolor*. The two supposed local forms of *M. formicivorus* (called by Hargitt *M. formicivorus* and *M. melanopogon*) are shown to be inseparable.

Figures are given of *Chloronerpes callopterus*, *C. simplex*, *C. godmani*, *C. auricularis*, and *Melanerpes chrysauchen*.

79. *Gurney on the Birds of Prey of the Norwich Museum.*

[Catalogue of the Birds of Prey (*Accipitres* and *Striges*), with the Number of Specimens in Norwich Museum. By J. H. Gurney, F.Z.S. Pp. 56. 8vo. London, 1894. R. H. Porter.]

The celebrated Gurney Collection of Birds of Prey having been now transferred to the new Museum in Norwich Castle, there seems a convenient opportunity for the publication of a catalogue of its contents. This has accordingly been done by the son of the founder and maker of the collection, who has himself devoted much time and attention to the care and completion of the great work of his father.

The catalogue contains the names of the species of birds of prey, both diurnal and nocturnal, of which specimens are in the collection, with the number of specimens of each species and general indications as to its locality. At some future time, we venture to suggest, when the whole collection is in perfect order, and has been supplemented by most, if not all, of the *specimina desiderata* for which Mr. Gurney appeals at the close of the volume, it may be desirable to republish the catalogue on a more extended scale, giving the exact localities and authorities for each individual specimen.

From the summary of species it would appear that, of about 470 known *Accipitres*, 403 are represented in the Norwich Collection. Of 268 *Striges*, 195 are represented in the same collection. A good portait of John Henry Gurney, with his familiar signature underneath, forms a most appropriate frontispiece to the present volume.

80. *Hartert on Birds from the Congo Free State.*

[On some Birds from the Congo Region. By Ernst Hartert. Novitates Zool. ii. p. 55.]

Mr. Hartert describes as new *Lophoceros granti*, from the Aruwimi, and *Onychognathus intermedius*, from Lukolele, on the Congo, and records the occurrence of the rare Swift, *Chætura cassini*, Scl., on the Aruwimi.

81. *Hartert on a Swift from Tunis.*

[On *Micropus affinis* (Gray & Hardw.). By Ernst Hartert. Novitates Zool. ii. p. 57.]

Mr. Hartert considers the Tunisian Swift which Dr. Reichenow has lately named *Micropus koenigi* (Orn. Monats. 1894, p. 192) to be "identical" with the Palestine form of *Cypselus affinis*, which was at one time named *C. galilæensis*. It might, however, be possible, he says, to consider this form as a distinct subspecies of *C. affinis*, though many specimens cannot be assigned to one or the other with certainty.

82. *Kelsall on a new Jungle-fowl.*

[Description of a new species of Jungle-fowl, said to come from Borneo. By Lieut. H. J. Kelsall, R.A. Journ. Straits Br. R. As. Soc. no. xxiv. p. 167 (1891) and xxv. p. 173.]

We have hitherto omitted to notice that Mr. Kelsall has described a new Jungle-fowl from a specimen living in the Botanic Gardens at Singapore as *Gallus violaceus.* It is said to resemble *G. varius* of Java in having only a single throat-wattle. Two other examples in the possession of a native dealer in Singapore are subsequently recorded.

83. *Kelsall on the Nest and Eggs of two Birds of Pahang.*

[Note on the Nest and Eggs of *Nyctiornis amicta.* By Lieut. H. J. Kelsall, R.A. Journ. Straits Br. R. As. Soc. no. xxiv. p. 169, 1891.

Nest and Eggs of *Henicurus ruficapillus,* Temm. By Lieut. H. J. Kelsall, R.A. Journ. Straits Br. R. As. Soc. no. xxiv. p. 170, 1891.]

Mr. Kelsall describes nests and eggs of *Nyctiornis amicta* and *Henicurus ruficapillus* met with during his travels in Pahang.

84. *Kelsall on* Machærhamphus alcinus.

[On the Occurrence of the rare Bat-Hawk in Johor. By H. J. Kelsall, R.A. Journ. Straits Br. R. As. Soc. no. xxv. p. 171, 1894.]

The occurrence of a specimen of the rare bird of prey, *Machærhamphus alcinus,* in Johore, Malay Peninsula, is noted. It was shot in December 1893 by the bird-collector of the Raffles Museum.

85. *Kelsall and Ridley's Trip to Pahang.*

[Account of a Trip up the Pahang, Tembeling, and Tahan Rivers, and an attempt to reach Gunong Tahan. By H. J. Kelsall, R.A. Journ. Straits Br. R. As. Soc. no. xxv. p. 33, 1894.]

This paper contains an account of the expedition of Messrs. Ridley, Davison, and Kelsall up the Pahang River, and their attempt to reach Gunong Tahan (see Ibis, 1891, p. 476) in 1891. There are various allusions to the birds met with in the narrative, and a list of the 124 species observed or collected during the expedition is given at the conclusion.

86. *Lydekker's 'Royal Natural History.'*

[The Royal Natural History. Edited by Richard Lydekker. Vols. I., II., III. London: Warne & Co.]

In the third volume of this, the most recent of our popular natural-histories, the subject of "Birds" occupies the latter half. The first six chapters of this portion, containing the Passeres, are from the pens of the Rev. H. A. Macpherson and the editor. Chapters vii. to ix., relating to the Picariæ, are written by Dr. R. Bowdler Sharpe.

87. *Meyer on a male Capercailzie in Female Dress.*

[Ein Hennenfedriger (Thelyider) Auerhahn. Von A. B. Meyer. Abhandl. u. Ber. k. zool. u. anthrop. Mus. Dresden, 1894–95, no. 3.]

The author describes and figures a male of *Tetrao urogallus* in female dress. The specimen was obtained in 1894 in Southern Bavaria, and is the first recognized instance of this abnormality.

88. *Meyer on two new Paradise-birds.*

[Zwei neue Paradiesvögel. Von A. B. Meyer. Abh. u. Ber. k. zool. u. anthrop. Mus. Dresden, 1894–95, no. 5.]

In this article Dr. Meyer gives us a full description and illustration of *Pteridophora alberti*, one of the most wonderful of the many new discoveries in the Paradiseine family, already known to many of us from the example exhibited by Mr. Rothschild at the Meeting of the B. O. C. on the 20th February, 1895 (see Bull. B. O. C. iv. p. xxi). Another fine species also described and figured is *Parotia carolæ* (*cf.* Bull. B. O. C. iv. p. vi). Both are from the Amberno Mountains, on the eastern side of the Bay of Geelvink.

89. *Meyer and Wiglesworth on new Birds from Celebes.*

[Neue Vögel von Celébes. Von A. B. Meyer und L. W. Wiglesworth. Abhandl. u. Ber. k. zool. u. anthrop. Mus. Dresden, 1894–95, no. 4.]

The authors describe as new birds from Celebes *Malia recondita*, *Pachycephala* (provisionally) *bonensis*, *Arachnothera celebensis*, and *Ardetta riedeli*. Four other species are registered as new to the Celebean avifauna.

90. *Minot on the Land-birds of New England.*

The Land-Birds and Game-Birds of New England, with descriptions of the Birds, their Nests and Eggs, their Habits and Notes, with Illustrations. By H. D. Minot. Second edition, edited by William Brewster. 8vo. Boston and New York, 1895.]

Mr. Brewster has prepared and edited a new edition of Minot's work, which was originally published in 1876, and appears to have attained an undoubted success in the country to which it relates. Written by a youth of seventeen, as Mr. Brewster tells us, and with little or no outside help, it found favour at once, and has been ranked among the authorities on the subject of which it treats for nearly twenty years. In the present edition the editor has introduced little change, except in making the nomenclature conform to that of the "A. O. U." Check-list and in a few smaller alterations.

Minot's work owes its influence to its lively and descriptive field-notes. The author, who was a railway manager, unfortunately lost his life in a collision in 1890.

In the Appendix Mr. Brewster brings the subject up to date by a chapter on the birds added to the New-England list since the first edition of the work appeared.

91. *Newton and Gadow's 'Dictionary of Birds,'* Part III.

[A Dictionary of Birds. By Alfred Newton, assisted by Hans Gadow. With Contributions from R. Lydekker, C. E. Roy, and R. W. Shufeldt. Part III. London: A. & C. Black, 1874.]

The third part of the 'Dictionary of Birds,' though dated 1894, has only just reached us (May 22nd). We have to thank the publishers for sending it. It contains articles from "Moa" to "Sheathbill," many of which are of great interest, while all are full of information and worthy of perusal, though if assistance on a particular point is required it is by no means easy to discover under what head to seek it.

As regards the Moa, Mr. Lydekker has done well to give his readers a caution about the so-called *Dinornis queenslandiæ*. It is more than doubtful, we are told by Capt. Hutton, whether the femur upon which this name was based has anything at all to do with *Dinornis* (*cf.* Ibis, 1894, p. 306).

Though we do not deny that in some Motmots the spatulation of the tail-feathers may be effected by the bird itself (Dict. p. 595), we doubt this being the case in other species*, and in some Motmots, we believe, the tail-feathers are originally developed in a spatulate form.

The sketch of the way in which the Pennant-winged Nightjar (*Macrodipteryx*) carries its long second primary (Dict. p. 641) is quite novel and most remarkable. It is not easy, however, to understand how the second primary of a bird can be elevated at nearly right angles to the other primaries, and it would be desirable to ascertain the mechanism by which this phenomenon is effected.

On the whole, the salient features of the 'Dictionary' appear to us to be its excellent anatomical and osteological articles and the original antiquarian information which abounds in its pages. We trust to see the completing part of it shortly issued, and are sure that every ornithologist should possess a copy of this most useful work.

92. *Rey on the Cuckoo.*

[Beobachtungen über den Kuckuck bei Leipzig aus dem Jahre 1894. Von E. Rey. J. f. O. 1895, p. 30.

Der Müllerische Kuckuck brütet immer noch! E. Rey. Orn. Monatsb. p. 7.

Was ist der Grund für die grosse Variabilität der Kuckuckseier? Von E. Rey. Monatsb. Deutsch. Ver. z. Schutze d. Vogelwelt, 1895, no. 1.]

Dr. Rey continues his articles on the Cuckoo and its habits, and furnishes us with valuable statistics, which we commend to the notice of those interested in the Cuckoo-question.

93. *Robinson's Trip to the Tropics.*

[A Flying Trip to the Tropics, a Record of an Ornithological Visit to the United States of Colombia, South America, and to the Island of

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* [There has been a specimen of *Momotus subrufescens* living in the Zoological Society's Gardens since May 6th, 1890. It reproduces its moulted tail-feathers in a perfect state every year. The keeper in charge of it says that he has *never* seen it nibble out the webs of the central rectrices (as it ought to do), but that the pieces disappear gradually—he does not know how.—P. L. S.]

Curaçao, West Indies, in the Year 1892. By Wirt Robinson. Pp. 194. 8vo. Cambridge, 1895.]

Second-Lieutenant Wirt Robinson, of the U.S. Artillery, gives us a most lively and interesting account of his trip to Columbia in search of birds in the summer of 1894. Accompanied by his wife and his brother, he left New York for Curaçao, and after a few days' stay in that island (where birds were diligently observed and collected), proceeded to Barranquilla, at the mouth of the Magdalena. This river was ascended to Yeguas, the limit of steam-navigation, whence a short railway conveyed the travellers to Honda, and mules onwards to Guaduas, a town situated some 3400 feet above the sea-level, on the main road to Bogota. After a week's stay here, the return to New York was made by nearly the same route. No single opportunity appears to have been lost of collecting birds during the journey out and home; and as the party were only away 54 days, of which 16 were spent on the ocean, and had to "make their own skins," they must have worked pretty hard to bring back 210 specimens. Mr. Ridgway has identified the skins, of which a systematic account is given in Chapter viii. of the present volume. Those obtained or observed in Columbia are referred to 91 species, those of Curaçao to 23. Short field-notes are added on each of the species.

Numerous illustrations printed in the text are interspersed throughout the narrative. They represent scenes on the journey, birds and other animals met with, and maps to illustrate the route. Besides these, four coloured plates, drawn by Keulemans, illustrate some of the most notable species met with; these are *Rhamphastos citreolæmus*, *Psittacula conspicillata*, *Eupsychortyx leucotis*, and *Icterus xanthornus curasoensis*. At the close of the work a few suggestions are added for the benefit of brother collectors who may meditate a similar excursion and lists of published works on Columbia and Curaçao. Altogether we may express an opinion that Lieut. Wirt Robinson made very good use of his short holiday and has given us its results in a very handy and attractive form.

94. *Rothschild on a new* Miro.

[On a new *Miro* from the New Zealand Region. By the Hon. Walter Rothschild. Novitates Zool. i. p. 688.]

Mr. Rothschild characterizes the *Miro* of the Snares Islands as a representative species of *M. traversi* under the name *M. dannefaerdi.*

95. *Rothschild on* Salvadorina waigiuensis.

[On *Salvadorina waigiuensis*, Rothsch. & Hartert. By the Hon. Walter Rothschild. Novitates Zool. ii. p. 22.]

Mr. Rothschild now gives a coloured figure of this singular Duck, which was mentioned (*lapsu calami*) as a Pigeon (above, p. 160) !

96. *Rothschild and Hartert on a new Bustard.*

[On a new Bustard from the Palæarctic Region. By the Hon. Walter Rothschild and Ernst Hartert. Novitates Zool. i. p. 689, and ii. p. 54.]

The Houbara Bustard of Fuerteventura, in the Canary group, is separated as *Houbara fuertaventuræ* (correctly *fuerteventuræ*).

97. *Salvadori on two Parrots of the Genus* Pyrrhura.

[Viaggio del dott. Alfredo Borelli nella Republica Argentina e nel Paraguay.—Intorno alla *Pyrrhura chiripepé* (Vieill.), e descrizione di una nuova species del genere *Pyrrhura.* Nota di T. Salvadori. Boll. Mus. Zool. ed Anat. Comp. R. Univ. Torino, ix. no. 190.]

From specimens collected by Dr. A. Borelli at Villa Rica, in Upper Paraguay, Count Salvadori is now able to distinguish *Pyrrhura chiripepe* (Vieill.), ex Azara, as a good species, and to describe an allied species as new under the name *Pyrrhura borellii.*

98. *Salvadori on the Birds of the Mantawi Islands.*

[Viaggio del Dr. Elio Modigliani nelle Isole Mentawei.—Catalogo di una Collezione di Uccelli di Si-Pora. Per Tommaso Salvadori. Ann. Mus. Civ. Genova, ser. 2, xiv. p. 588.]

The Mantawi Islands lie on the east coast of Sumatra, south of Nias Island. Sigr. Modigliani managed, with great difficulty, to visit Si-pora, or South Pora, in the centre of the group, in 1894, and obtained a collection of 211 birds, which are referred by Count Salvadori to 34 species. So far as this slender material goes, the avifauna, as was to be expected, closely resembles that of Sumatra, most of the characteristic species being also found in Nias. Three new species (*Graucalus crissalis*, *Buchanga periophthalmica*, and *Dicruropsis viridinitens*) are representatives of Sumatran forms; while *Urococcyx æneicauda* is of special interest, because the locality of the single example of it previously known (probably the original type) was unknown. (*Cf.* Shelley, Cat. B. xix. p. 400.)

99. *Salvin on Birds from Peru.*

[On Birds collected in Peru by Mr. O. T. Baron. By Osbert Salvin, M.A., F.R.S., &c. Nov. Zool. ii. p. 1.]

Mr. Salvin describes a collection of birds made by Mr. O. T. Baron during the first half of 1894 in Northern Peru. Mr. Baron landed at Trujillo and crossed the Andes into the province of Cajamarca, which is on the eastern slope of the range, and drains into the headwaters of the Marañon. His collection is of great interest, containing examples of 137 species, of which the following 16 are described as new in the present paper:—*Basileuterus nigrivertex*, *Buarremon baroni*, *B. rufigenis*, *Poospiza alticola*, *P. rubecula*, *Hæmophila læta*, *H. personata*, *Pachyrhamphus similis*, *Siptornis baroni*. *S. hypochondriacus*, *Phacelodomus dorsalis*, *Scytalopus unicolor*, *Oreotrochilus stolzmanni*, *Psittacula xanthops*, *Columba œnops*, and *Leptoptila decolor*.

This large amount of novelty is very curious, as the district immediately adjoins that traversed by Stolzmann, although a high branch of the Andes intervenes. A complete set of the species has been acquired by Messrs. Salvin and Godman, while the second set has gone to the Tring Museum.

Coloured figures are given of *Buarremon baroni*, *B. rufigenis*, *Cyanolesbia griseiventris*, and *Psittacula xanthops*.

100. *Sharpe's 'Monograph of the* Paradiseidæ.'

[Monograph of the *Paradiseidæ*, or Birds of Paradise, and *Ptilonorhynchidæ*, or Bower-Birds. By R. Bowdler Sharpe, LL.D., F.L.S., &c. Part IV. Folio. London: H. Sotheran & Co., 1895.]

The fourth part of this splendidly illustrated work is now before us.

The following species are figured in it:—

Drepanornis bruijni.
—— cervinicauda.
Uranornis rubra.
Diphyllodes chrysoptera.
Lophorhina superba.
Phonygama keraudreni.
Cnemophilus macgregori.
Ælurœdus arfakianus.
—— melanotis.
—— buccoides.

We remark that Dr. Sharpe states that he has proposed a new generic name (quite unnecessarily in our opinion) for *Drepanornis bruijni*. But he gives us no reference to where this new name (*Drepananax*) was published.

101. *Shufeldt on the Crane-tribe.*

[On the Osteology of certain Cranes, Rails, and their Allies, with Remarks upon their Affinites. By R. W. Shufeldt, M.D. Journ. of Anat. & Phys. xxix. p. 21.]

The author having studied numerous skeletons of American Paludicolæ, offers remarks on the osteology of that group, which he considers to embrace two "superfamilies"—Gruioidea and Ralloidea—the former containing the Gruidæ and Aramidæ, and the latter the Rallidæ. We believe this to be a very natural arrangement, but there is certainly little novelty about it.

XXXII.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed "to the Editors":—

9 Elm Street, Ann Arbor, Mich., U.S.A.
March 1, 1895.

Sirs,—We note with a good deal of surprise that Mr. Ogilvie Grant (see above, p. 112) has re-discovered

"*Alcyone philippinensis* (Gould)," and wish to offer a few remarks on the points at issue.

The question is simply this: are there in reality two such species as *Ceyx cyanopectus* and *Ceyx philippinensis*, or are we simply dealing with opposite sexes of the same species? Dr. Steere brought back with him in 1888 abundant materials to settle this question conclusively, but on examining his pamphlet on the Birds and Mammals of the Steere Expedition, we do not find that he referred to it in any way.

Without doubting in the least Mr. Whitehead's ability to determine the sexes of birds correctly, we are still perfectly certain that Mr. Ogilvie Grant's conclusion is incorrect.

Ceyx cyanopectus is an extremely common bird in several of the localities visited by us in 1890–93, notably in Masbate and Mindoro. The form with the blue pectoral band and the form which lacks it are invariably found side by side and in equal abundance. If they belong to distinct species then we have repeatedly witnessed a remarkable occurrence, namely, *the pursuit of the female of one species by the male of another.*

Furthermore we have been the victims of a remarkable series of coincidences, as among the scores of specimens that have passed through our hands we have never yet found an exception to the rule that the birds with the blue pectoral band are *males*. Immature males, however, have the plumage of the females, lacking the pectoral band.

Mr. Ogilvie Grant's conclusions were drawn from five specimens. These were "a male and female of '*Ceyx cyanopectus*' and a male and two females of *C. philippinensis*." We do not hesitate to express the opinion that the male of "*C. philippinensis*" owed its lack of the blue pectoral band to the fact of its being immature, and that in the case of the "female" of *Ceyx cyanopectus* a mistake in sexing was made Such a mistake might readily occur, as anyone who has ever sexed small Kingfishers in the tropics must know. They putrefy rapidly, and except in the breeding-season their ovaries and testes are often so minute as to require careful examination with a lens in order to insure a correct determination.

A very large series of specimens of this Kingfisher was collected by the Steere expedition, and on our second trip to the Philippines we on one occasion shot thirteen specimens of the species in question in a single morning, so that we do not feel that there is much room for mistake.

It is worthy of note in this connection that the allied species, *Ceyx nigrirostris*, which inhabits Panay, Negros, and Cebu, shows the same differences between the sexes.

We are pleased to note that Mr. Ogilvie Grant agrees with our own previously expressed opinion ('Preliminary Notes on the Birds and Mammals of the Menage Expedition,' p. 48, Dec. 8, 1894) that *Ceyx steerii*, Sharpe, and the species under discussion are identical.

We are also glad to note that Mr. Hargitt and Mr. Ogilvie Grant both agree with us as to the distinctness of *Iyngipicus maculatus* and *I. validirostris*, as well as to the propriety of applying the latter title to the Luzon bird. The points of difference between the two species were recognized by Dr. Steere, who named the species correctly, and were given by us in detail on page 51 of the paper above referred to. After reading Mr. Grant's description of *Æthopyga flavipectus* and examining the fine plate in 'The Ibis' for January, we are forced to the conclusion that it is identical with our *Æthopyga minuta* from Mindoro, the type specimen of which was unfortunately stolen. Mr. Grant's description antedates ours by some weeks, and his title will of course take precedence.

It is to be hoped that Mr. Whitehead, while investigating the mountain fauna of the Philippines, will not neglect Mt. Halcon in Mindoro. Should he visit the latter island we can promise him that if he will ascend the river which connects Naujan Lake with the sea he will get specimens enough to satisfy him as to the identity of *Ceyx cyanopectus* and *C. philippinensis* in one day.

We hope he may also obtain more specimens of the beautiful little *Æthopyga* of the island than we were able to secure, and have little doubt that it will prove to be the species discovered by him in Luzon. The general similarity of the Nectariniidæ and Dicæidæ of the two islands makes this supposition the more probable.

Yours &c.,
Dean C. Worcester,
F. S. Bourns.

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9 Elm Street, Ann Arbor, Mich., U.S.A.
May 7, 1895.

Sirs,—In his fourth paper on the 'Birds of the Philippine Islands,' we note that Mr. Ogilvie Grant remarks: "It is gratifying to observe that my papers in 'The Ibis,' based on the results of Mr. Whitehead's former collections, have at last had the effect of inducing our American friends, Messrs. F. S. Bourns and D. C. Worcester, two of the naturalists who accompanied the second Steere expedition to the Philippines, to publish the long-expected paper descriptive of the results of their collecting trip."

This highly remarkable statement would perhaps require no comment from us were it not that our final paper, which was turned over to the Minnesota Academy months ago for publication, seems in a fair way to be as long delayed as was its predecessor, and we are not disposed to bear the responsibility for the delay in either case.

We do not know what Mr. Grant means by "the second Steere expedition." We had the pleasure of accompanying Dr. Steere on the first and *only* "Steere expedition" of which we have any knowledge, but that gentleman had not the remotest connection with our second visit to the Philippines.

The causes of the unseemly delay in the publication of our results were, briefly, the financial ruin of the gentleman who sent us to the Philippines, to whom the collections secured by us belonged, and the lack of means for prosecuting work upon them on the part of the Minnesota Academy, into whose hands they eventually came. We did not have access to our collections for a year after our return. Our preliminary paper was, however, completed before we had the pleasure of seeing the first of Mr. Grant's very interesting contributions to our knowledge of Philippine ornithology. Our final paper has been in the hands of the Minnesota Academy for some months, and we beg to assure Mr. Grant that he could not possibly feel half the disgust over the delay in the publication of our results that we have felt ourselves. Had the matter been under our own control we venture to say that *no one would have experienced any annoyance from our slowness.*

Yours &c.,
DEAN C. WORCESTER.
FRANK S. BOURNS.

Note on Xenicus insularis.—The bird described and figured under this name in the last number of 'The Ibis' (above, p. 236, Pl. VII.) is identical with Mr. Rothschild's *Traversia lyalli*, Bull. B. O. C. no. xxii. p. x, and above, p. 269. There can be no question that the latter name has precedence in point of date of publication, but Sir W. Buller's description, together with a specimen of the bird for illustration, was received by the Editors in this country and was in their hands before Mr. Rothschild's communication was made to the B. O. C.

Recent Ornithological Expeditions.—Mr. E. Lort Phillips, F.Z.S., accompanied by Mrs. Lort Phillips, returned to his old quarters in Somaliland in January last, and made a select but most interesting collection of birds, embracing amongst other rarities examples of a new Blackbird and a new Crow *.

Col. Yerbury, F.Z.S., went to Aden in January last, and in the course of two months' collecting in the interior succeeded in settling several questions relative to its birds, which had been left unsolved in his paper on this subject (Ibis, 1886, p. 11), and in that of Lieut. Barnes (Ibis, 1893,

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* See Bull. B. O. C. above, p. 383.

p. 57). We hope to be able to give some account of both these expeditions in our next number.

Mr. Ogilvie Grant has been able to carry out successfully a long-planned expedition to the Salvage Islands, between Madeira and the Canaries, and seems to have brought away specimens of every natural object to be found in this remote spot, including specimens of a Petrel (*Oceanodroma cryptoleucura*) new to the European Avifauna.

Mr. Ogilvie Grant has received from Mr. Whitehead another set of birds from the mountains of Luzon, which contains many novelties, and amongst others specimens of a new Bullfinch (*Pyrrhula*). We hope that an account of this collection will also be ready for our next number.

Mr. R. C. L. Perkins, under the directions of the Sandwich Island Committee, left again for his former quarters in February last, and was to proceed first, we understand, to Kauai. The Committee have now resolved to distribute the specimens contained in Mr. Perkins's first collection (about 500 in number, from the islands of Maui, Kauai, Molokai, Lanai, Oahu, and Hawai), assigning the first set to the British Museum and the second set to the Museum of the University of Cambridge.

'Aves Hawaiienses' and the 'Avifauna of Laysan.'—Both Mr. Scott B. Wilson and Mr. W. Rothschild have issued notices to the subscribers to their respective works that they propose to defer the publication of their concluding parts until the return of Mr. Perkins from his second expedition to the Sandwich Islands. This delay, we venture to think, is much to be regretted in both cases, as the date of the close of Mr. Perkins's new expedition is quite indefinite, and it is on all accounts desirable to bring such works to a speedy conclusion, without waiting with the hopeless idea of rendering them "perfect."

Anniversary Meeting of the British Ornithologists' Union, 1895.—The Annual General Meeting of the British Ornithologists' Union was held at the rooms of the Zoological

Society of London, 3 Hanover Square, on Wednesday, the 8th of May, at 6 P.M. In the absence of the President, Mr. PHILIP LUTLEY SCLATER, M.A., Ph.D., F.R.S., was in the Chair. The Minutes of the last Annual Meeting having been read and confirmed, the Report of the Committee was read. It stated that three Ordinary Members (Major H. C. Harford, Mr. W. V. Wood, and Lieut.-Col. J. H. Yule) had withdrawn, and that three (E. Hargitt, F.Z.S., the Rev. H. S. Hawkins, M.A., and A. G. More, F.L.S.) had died since the last Anniversary.

The number of the Members of the Union at the close of 1894 was 281, consisting of 250 Ordinary, 1 Extraordinary, 10 Honorary, and 20 Foreign Members. There were 19 Candidates for the Ordinary Membership, to be balloted for at the present Meeting.

The accounts for the year 1894 were presented by the Secretary, and approved by the Meeting.

The following Ordinary Members were balloted for and declared to be duly elected:—

H.R.H. Ferdinand, Prince of Bulgaria, Sophia, Bulgaria.
Dr. J. Rose Bradford, F.R.S., 52 Upper Berkeley Street, Portman Square, W.
S. Gurney Buxton, Calton Hall, Norfolk.
Richard Edward Coles, Oakfield, Milton, Lymington.
Sir Savile B. Crossley, Bart., F.Z.S., Somerleyton, Lowestoft; and 12 Carlton House Terrace, S.W.
Surgeon-Capt. C. Donovan, 1st Burma Rifles, Maymyo, Burma.
Edmund A. S. Elliot, M.R.C.S., Albert Villa, Kingsbridge, South Devon.
Carl, Freiherr von Erlanger, Nieder Ingelheim, Rhein-Hessen, Germany.
John J. M. Falconer, Magdalene College, Cambridge.
Frederick William Frohawk, 39 Dornton Road, Balham, S.W.
Oxley Grabham, Grosvenor Road, Scarbro'.
Lionel W. Hinxman, B.A., Geological Survey of Scotland, Edinburgh.

Henry Eliot Howard, Stone House, Kidderminster.
William Edward Kingsford, Ashdene, East Moleseey, Surrey.
Robert Nesham, Utrecht House, Queen's Road, Clapham Park, S.W.
H. Noble, Temple Combe, Henley-on-Thames.
Charles Boughey Rickett, Hongkong and Shanghai Bank, Foochow.
Henry Marriage Wallis, 6 Southern Hill, Reading.
Lieut.-Col. John William Yerbury, R.A., F.Z.S., Army and Navy Club, S.W.

The outgoing President and Secretary were re-elected, and Mr. J. E. Harting was elected into the Committee in the place of Mr. Osbert Salvin, M.A., F.R.S., who retired by rotation.

The question of a General Index for the fourth, fifth, and sixth series of 'The Ibis' having been again discussed, and the Committee having pointed out their difficulties in the matter, it was agreed "That the Committee be authorized to proceed with the Index at once."

After a vote of thanks to the Chairman, the Meeting adjourned.

The Annual Dinner, subsequently held at Limmer's Hotel, was attended by 29 Members and guests.

Obituary.—Mr. A. G. More and Mr. G. N. Lawrence.

Alexander Goodman More—whose lamented decease we recorded in our last issue—was born in London on September 5th, 1830, but by descent was an Aberdonian. In early life he resided at Renens, near Lausanne, and in other parts of the Canton Vaud. Five years were spent at Rugby; and from 1850 to 1853 he was at Trinity College, Cambridge, where, in addition to the usual course of studies, he continued the work already commenced in botany, entomology, conchology, in fact, in almost every branch of Natural History, for those were not the days of specialists. This catholicity of taste was More's distinguishing feature in after-life and down to the day of his death. In 1867 he was appointed Assistant in the Dublin Natural History Museum, of which he became Curator in 1881 on the death of Dr. Carte, and there he continued until his retirement, in consequence of ill-health, in 1887. During those twenty years his rooms at Dublin were the rendezvous of all who were interested in Natural History. More's energy and genial manner stimulated the pursuit of every branch of science, and it would be difficult to over-rate the value of his services to zoology and botany in Ireland. He was, in fact, and *par excellence, the* naturalist for that island, though not for it alone; for when in the Isle of Wight, during his youth, he had already written some useful articles on Birds. In this Journal, for 1865, More published a valuable series of articles on "The Birds of Great Britain during the Nesting-Season"; and later, he prepared two excellent "Lists of Irish Birds," to say nothing of minor contributions. Even after his retirement, and when physically crippled, he retained his mental activity and cheerfulness to the last. It was not, however, so much what he wrote for himself as the assistance and stimulus which he gave to others, that constitute More's claim to grateful remembrance; and it is with a full heart that his former companion in Connemara, and the recipient of immeasurable assistance on ornithological subjects, writes this inadequate *In Memoriam* of one of his best friends.—H. S.

George Newbold Lawrence, whose loss to the list of Foreign Members of the B. O. U. we have already recorded, died at his home at New York on the 17th January last, at the good old age of 89 years. Lawrence was born in the city of New York, where he always resided, on the 20th October, 1806, and passed his life in business as a member of a successful firm of wholesale druggists. In this business he continued for 36 years, devoting all his spare time to ornithology, to which, besides his natural liking, he was stimulated by close intimacy in early days with Spencer Baird and J. J. Audubon. Commencing early in life with native birds, Lawrence soon extended his collecting range into

Mexico and Central America, and eventually over the whole of the New World. Only a few years ago the collection thus amassed during fifty years' work, numbering about 8000 specimens, and containing about 300 types of new species, was deposited in the American Museum of Natural History at New York.

Lawrence published his first paper on birds in 1844, and continued a series of notes and memoirs in the 'Annals of the Lyceum of Natural History of New York,' the 'Proceedings of the Academy of Natural Sciences of Philadelphia,' the 'Proceedings of the United States National Museum,' and other periodicals for nearly 50 years. His various writings, of which a complete account has been published in no. 40 of the 'Bulletin of the United States National Museum,' are 121 in number. In 1858 he was associated with Baird and Cassin in Baird's great work on 'The Birds of North America.' Another important piece of work performed by Lawrence was his Catalogue of the collection of birds made by McLeannan on the Panama Railway, of which the first portion was published in 1862. At that time Panama was almost a *terra incognita* for naturalists, and Lawrence's memoir excited great interest all over the ornithological world.

So long ago as December 1856 the writer of this notice had the pleasure of making Lawrence's acquaintance, having previously known him by correspondence. He well recollects several most interesting evenings passed in Lawrence's company in an underground apartment at the Naturalist's dwelling in New York city, where the collection of birds was at that time kept. After that date Lawrence and the writer maintained a constant correspondence upon bird-topics, and met again at New York in 1884. An excellent notice of Lawrence and his work will be found in 'Science' for March 8th of the present year, from the pen of Dr. C. Hart Merriam, and a biographical sketch of him by Mr. Foster forms a preface to the bibliography of which we have already spoken. —P. L. S.

THE IBIS.

SEVENTH SERIES.

No. IV. OCTOBER 1895.

XXXIII.—*Notes on Birds found Nesting on Albatross Island* in Bass Strait, Australia.* By D. LE SOUËF.

On November 26th, 1894, I landed on Albatross Island, accompanied by Mr. H. P. C. Ashworth. I remained there five days, and found the following eleven species of birds nesting:—

1. DIOMEDEA CAUTA. (*Shy Albatross.*)

These beautiful birds were nesting in several small companies on different parts of the island: the largest colony having about forty nests, and the smallest only six. They built in some instances on the rocky ledges of the cliff, at various heights, but the larger number were on the top of the island, near the edge of the cliff. The rocky ground at the "rookery" was quite bare of vegetation, and mostly covered with white guano. The male and female sit on the nest in turn, and on one occasion I saw a male bird take the place of a female, who then flew off to sea.

There is very little difference between the appearance of the male and female—the grey coloration on the side of the neck being slightly darker and the yellow markings on the beak brighter in the male,—but I did not notice any material difference in their size. The breadth across the wings, when stretched out, was 8 feet from tip to tip. Frequently, when one bird is on the nest, its mate will be seen sitting close alongside, and they cackle one to the other and rub their beaks together. Again, when two strange birds meet, they stretch out their necks, make a loud cackling noise, and, spreading out their tails, lean forward and put their heads several times first on one side and then on the other side of each other; and when a bird makes its way through the colony, every sitting bird that it passes makes a lunge at it with open beak, and it has to run the gauntlet while passing through.

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* [Albatross Island is one of the Hunter Islands, off the north-western point of Tasmania.—EDD.]

The nests are situated at varying distances one from the other, from a foot upwards, some on the ground and others again on the uneven side or top of a point of rock. Some of the birds had evidently come on shore to rest only, while a few of them had their heads turned back and partially under their wings, and were asleep.

When one wished to fly, it had to walk to the edge of the cliff and go off with a downward sweep; but when the wind was blowing very strong the bird could then rise, facing it, from a point of rock. One bird was found in a depression about 60 feet across and 30 feet deep, with steep sides, and it could neither climb nor fly out, so, having caught it, I climbed up the bank with the bird under my arm and took it back to the "rookery." Their nests had the appearance of being used year after year, probably being only renovated each season. One unused nest was seen; it was in good preservation, although it had a little vegetation growing on it.

This species was named the "Shy Albatross" by Gould; but nothing of the nature of shyness was noticed either at sea or on land, for when crossing Bass Strait the birds frequently came within a few feet of the vessel and settled on the water again and again 20 feet away, in their endeavours to secure the barracouta hook which was dragging through the water. The hook was baited with a piece of wood and red flannel, and they were easily caught with a hook and line. Sir Walter Buller was informed by a collector that these birds nested on the Snares on high rocks, and rose off their nests on being approached and circled high in the air; but I think his informant must have mistaken the bird, as this Albatross cannot rise off its nest, unless under exceptional circumstances. Those on this island took very little notice of a visitor, and one could walk anywhere through the "rookery" without disturbing them; it was only with considerable difficulty and force that they could be made to leave their nests. A far more suitable name would have been the "White-capped Albatross," as the cap is pure white, marked off by the dark shading on each side of the eye, and this feature is very striking.

On approaching very close to the birds they would partly stand up on their nest (see figure, p. 417), leaning backwards and apparently resting the tail on the edge of the nest, and then facing the intruder. When one was within two feet of them, they would utter a loud cackling noise, shaking their heads up and down and opening and shutting their beaks rapidly. A considerable noise was made by the mandibles coming together, and at the same time a strong-smelling oily secretion was thrown up. In order to secure an egg, the beak of the bird was caught hold of with one hand and the egg taken up with the other, and on stepping back the beak was let go again; the bird would sit or stand on its nest for some time afterwards.

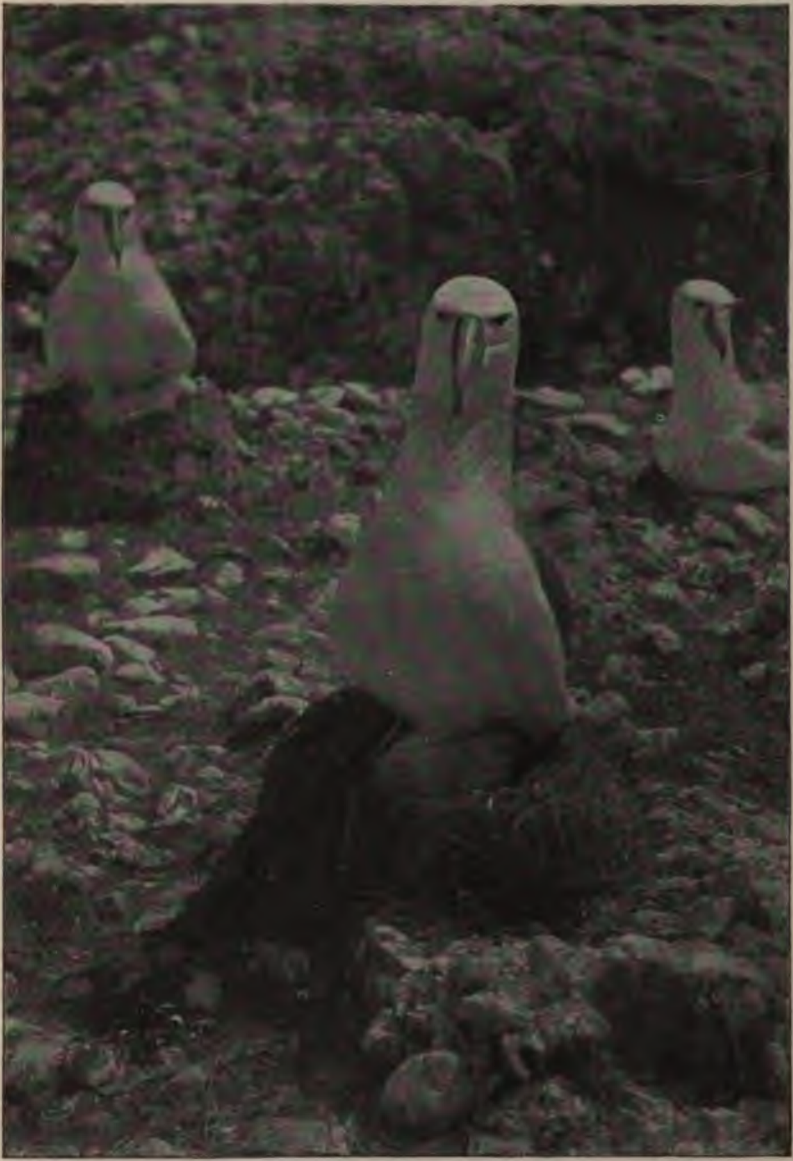
The orange-coloured strip of bare skin which goes from the corners of the mouth towards the back of the head was noticed only when the bird was disturbed and opened its beak wide to eject the oily substance. The use of it seems to be to enable the bird to open its mouth much wider than it otherwise could, for the purpose of letting the young bird put its head well inside the mouth of the parent when being fed.

The birds often had difficulty in alighting on a particular spot when the wind was blowing strongly on to their breeding-ground from the sea, as they always flew against the wind when desiring to alight, and I have watched them sometimes try seven or eight times before they could successfully accomplish their object. They came up with considerable force, holding their heads well back and stretching out their expanded feet at the same time, and the fact of having their wings half closed gave them a very ungainly appearance when alighting. If there is only a light breeze they can alight easily enough, although they often stumble before gaining a proper foothold. I noticed that whenever they flew off they always shook their tails from side to side a few times, and also when they passed excreta while flying they did the same thing.

Only one egg is laid, and that probably during the first week in October; and all the eggs hatch out within a few days of each other, showing that the birds commence laying at nearly the same time. About half the nests had newly-hatched young in them, and the eggs taken had young ones just ready to hatch; two addled eggs were obtained. The young are very fat and helpless, and if held up by their legs a small amount of oil runs out of their mouths; they are covered with white down and their beaks are black. They generally lie down in the nest, laying their head on one side, and at first sight have the appearance of being dead. When feeding they put their head right into the parent's mouth, their food consisting of an oily-looking substance.

On a warm day the parent bird was often noticed partly standing up in the nest and leaning backwards, so as to leave the chick uncovered, I presume for the sake of coolness, and also to let the little one sit up and move about in the nest. No young one was seen without the parent bird being on the nest.

The birds sat very closely on their single egg. This was kept in a kind of longitudinal bag, bare of feathers just below the breast-bone, into which the egg fitted, and was consequently very warm. Even when the bird half stood up in the nest the egg could not always be seen, but when the bird moved about the egg came down. The nests being dry, the eggs kept fairly clean; most of them were freckled more or less with reddish-brown surface-markings on the larger end. In some cases these markings were minute, numerous, and



Diomedea cauta on nest, with young.

almost continuous, while in others they were much larger and darker, on a slightly reddish ground, but there were various gradations between the two types. The colour could be washed off, by a little friction. The following are the measurements of six:—(A) 4·50 × 2·62 inches; (B) 4·15 × 2·75; (C) 4·17 × 2·68; (D) 4·15 × 2·61; (E) 4·20 × 2·76; (F) 4·38 × 2·70.

The nest is composed of chocolate-coloured soil, largely mixed, when in a wet state, with rootlets and other vegetation, which gives it the appearance of peaty substance. It is smoothed over and holds together fairly well, varying in height externally from 3 to 7 inches. The measurements of an average nest are as follows:—Internal diameter 11½ inches; external diameter 14; basal diameter 16½; external height 5½; internal depth 3¾. Weight 7 lbs. 6½ oz.

2. Prion turtur. (*Dove-like Prion.*)

These delicate little birds were nesting all over the island; they made their shallow burrows under the thick matted grass and other vegetation, and also occasionally laid in a sheltered recess under a rock. They probably commence laying about the last week in October. No young birds were found, but most of the eggs were partly incubated. When disturbed the parents never attempted to fly away, but generally left their eggs and tried to hide themselves in another part of the burrow. None were seen about the island during the day, but as soon as darkness set in they came flying in from sea to their various nests, and evidently left again before daybreak. Both the male and female were found sitting. On one occasion one flew at night into the cave in which the tent was pitched and was easily secured. These birds were first found breeding in Bass Strait in 1890, on North-east Island, one of the Kent group, by some members of the Victorian Field Naturalists' Club. Only one egg is laid, which is pure white: the following are the measurements of six taken on the island:—(A) 1·81 × 1·37 inches; (B) 1·77 × 1·43; (C) 1·88 × 1·37; (D) 1·87 × 1·32; (E) 1·89 × 1·36; (F) 1·83 × 1·38.

3. Eudyptula minor. (*Little Penguin.*)
4. Eudyptula undina. (*Fairy Penguin.*)

These birds were extremely numerous; they had their nests both under rocks and in crevices near the water's edge, and also on the top of the island under tussocks of grass and other herbage; in fact the whole island was a large Penguin "rookery," as their nests were found everywhere. Just before dark they approached their landing-places in flocks of some thirty birds. They waited about one hundred yards out from the land for some little time before coming in, and occasionally two flocks were to be seen not far from one another; the members of each flock keeping very close together. After a time one lot would rapidly approach the land, swimming both on and under the surface, and coming in just behind the break of the swell. Thus they looked exactly like a shoal of fish, with their shining bluish backs and silvery-white bellies, swimming quickly through the water. They all endeavoured to get a foothold on the rocks before the drawback carried them away again, and there was a great deal of squealing and splashing about in the water in their haste to accomplish it. This many of them did, but the remainder were carried back, only to be brought in again by the succeeding swell, when probably they made good their landing. To avoid being dashed to pieces against the rugged rocks by the heavy sea as it comes thundering in, they turn round and swim rapidly against the surf, which prevents their coming against any obstacle with so much force as they otherwise would when being carried in; and when the swell has spent itself, and just before the drawback occurs, they endeavour to secure a landing. Now and then a pair of birds may be seen hurrying in by themselves, but as a rule they arrive in companies.

The birds, when first seen approaching the island, were in a compact flock, and did not collect together just before coming on shore, so it is probable that they keep together when out at sea during the day. After landing they assembled just above high-water mark, and remained there for some time preening their feathers. When about half-an-hour had elapsed after the first contingent landed, and the numbers had been augmented by fresh arrivals to over 100 birds, one would start along their well-worn track, and the others would all follow, but they soon branched off along the different paths that led to their various nests. Many ascended steep inclines to reach the top of the island, and it was astonishing to see them climbing up at an angle of 60 degrees and more, occasionally aiding themselves with their wings and beak, sometimes walking, sometimes hopping from rock to rock.

On reaching their mates on the nest they commenced their peculiar braying sound, first one bird and then the other; and in the caves, where numbers of these birds had their nests, the sound was kept up more or less all night. The noise is very loud and discordant. Two slightly different notes were heard; possibly one was made by the Little and the other by the Fairy Penguin. The two kinds of birds did not seem to land at the same time, but got mixed up when congregating on the landing-places. The Fairy Penguin appeared to be of a brighter colour than the larger species.

The young of both species were covered with very dark brown down, and obtained their food by putting their beak inside that of their parent—the young being very noisy at feeding-time. They do not leave the nest until fully fledged, although when about three-parts grown their parents leave them to themselves during the day. Two white eggs are laid, but these soon get discoloured by the dirt. I noticed that one was always considerably longer than the other, as will be seen by the measurements. Three clutches of "Little" Penguins measured:—A. (1) 2·31 inches × 1·73; (2) 2·50 × 1·68. B. (1) 2·09 inches × 1·76; (2) 2·35 × 1·77. C. (1) 2·18 inches × 1·68; (2) 2·27 × 1·66.

The birds remained perfectly quiet all day on their nests, except when disturbed. They both pecked and scratched hard at the hand that attempted to take their eggs or young. The eggs and young found on the top of the island were, as a rule, not so far advanced as those nearer to the water.

5. Larus pacificus. (*Pacific Gull.*)

There was one pair of these birds on the island, and their nest was found on a high rocky point. It was lined with grass, and was well sheltered by high tussocks of grass on each side. The pair of handsomely marked eggs measured:—(1) 2·97 × 2 inches; (2) 2·99 × 1·99.

Remains of shell-fish were plentiful about the nest. These birds also feed on any refuse that may be thrown up by the sea, as well as on young birds left unprotected.

6. Larus novæ-hollandiæ. (*Silvery Gull.*)

These pretty birds generally seemed to keep together, and they had a fair-sized colony on the island. It was situated on a shelving rocky headland, where some short tussocky grass grew in patches in clefts in the rocks, and it was amongst this vegetation that the birds made their nests, lining them with a little grass. These had two or three eggs or young in them, but those with two largely preponderated. The young are covered with down and prettily marked. The measurements of a clutch of three eggs taken are:—(1) 2·17 inches × 1·59; (2) 2·21 × 1·53; (3) 2·18 × 1·61.

The variation in the markings of the different eggs was considerable. When disturbed the birds all hovered over their nesting-ground, continually uttering their cry, but soon settled again on being left alone. The presence of a neighbouring pair of Pacific Gulls would probably help to account for their anxiety to get back to their nests.

7. Graculus leucogaster. (*White-breasted Cormorant.*)

A small colony of these birds were building on ledges of the cliff, and had their grass nests in close proximity to those of the Shy Albatross; in one instance two Cormorants' nests were placed within a foot of that of an Albatross, and both bird and nest were plentifully besprinkled with their excreta. Most of the nests contained well-grown young; they were covered with very dark brown down. Only one clutch of eggs was found, measuring:—(1) 2·45 inches × 1·47; (2) 2·46 × 1·49.

The parent birds were very tame, allowing one in some instances to approach within two feet of them before they made any attempt to fly.

8. CORVUS CORONOIDES. (*White-eyed Crow.*)

A pair of these birds was noticed, and I saw one eating a Prion; the poor little bird was in a dreadfully mutilated condition, but still alive, when the Crow was driven off. These crows are very destructive to young and eggs on these islands. On the Penguin Rocks, not far from Albatross Island, I found a Crow's nest on December 2nd, built on a ledge of rock, with two young birds in it, just ready to fly. The nest was a large one and built of sticks. The absence of trees evidently made them choose this curious nesting-place.

9. FALCO MELANOGENYS. (*Black-cheeked Falcon.*)

One pair of these birds was seen and their nesting-place was discovered in a sheltered recess of a ledge of rock on the side of a cliff. They do not seem to make any nest, but lay their two eggs on the bare ground. One addled egg was found; it had unusually light brown markings and measured 2·09 inches × 1·65. A young bird was noticed flying about with the parents—evidently only one of the clutch had been hatched. Scattered about the nesting-place were remains of various Prions, which seem to be the principal food of the Falcons here. Most of the high rocky islands near were tenanted by a pair of these birds.

10. DEMIEGRETTA SACRA. (*Reef-Heron.*)

I found the stick nest of these birds on Penguin Rocks. It was situated about fifty feet above the sea, on a broad ledge of rock in a cavity under a large block of stone, and was difficult to get at. A blue-coloured bird was flushed off the nest, but its mate was not seen. The nest contained four fresh eggs, of a delicate bluish-white colour: their measurements were:—(1) 1·88 × 1·41 inches; (2) 1·82 × 1·40; (3) 1·81 × 1·38; (4) 1·87 × 1·39.

I was informed by those who live near these islands that the White and the Blue Reef-Herons often intermix, and that in a nest with young found last season in a cave, one of the parents was white and the other blue.

11. Pelecanus conspicillatus. (*Australian Pelican.*)

About a dozen pairs of these birds nested on the Penguin Rocks on a small patch of clear ground just above high-water mark, and surrounded with high tussocky grass. The nests were very simple: a few sticks and bits of grass put together and almost level with the ground. There were one or two eggs or young in the nests, the latter being of various ages, from about three weeks old downwards. One little one, about three days old, managed in the absence of its parents to crawl from its rightful nest into that of its neighbour, which contained a bird about three weeks old. The elder bird immediately commenced vigorously pecking the little stranger, and would soon have killed it had the latter not been removed.

The young had no down on and their skin was bare; the regular lines of growth where the young feathers were appearing were plainly discernible. When they crawl they appear to stick their beaks into the soft soil and thus to pull themselves along, as they have not power to stand up and walk.

There appears to be some little time between the hatchings of the eggs in the same clutch, as one young bird was noticed being hatched while its companion was about seven days old; and in a clutch of two eggs taken, one was about five days more incubated than the other. Two eggs measured:—(1) 3·66 inches × 2·24; (2) 3·67 × 2·25.

XXXIV.—*On the Effect of Westerly Winds on the Flight of Gulls* (Laridæ) *and other Birds.* By J. H. Gurney.

In all birds it appears that wind, or the force of wind, is the prime mover in flight—that is to say, the action of the wings is greatly regulated by the direction and velocity of the wind, though, joined to this, the actual motive power is gravitation to the earth's surface. If there is absolutely no wind a bird cannot fly its fastest; its flight is, on the contrary, often somewhat listless, and locomotion probably becomes laborious. It follows that it is easier for a bird to make headway where there is some slight opposition—to fly against a gentle wind rather than with it. The truth of this hypothesis has not been recognized by many writers, but it may be especially tested on the coast of Norfolk. This juts out into the North Sea like a great rounded peninsula, and just in the middle of the bend lies the little town of Cromer, where, or in its neighbourhood, most of the following observations have been made. From its position Cromer is peculiarly adapted for watching the direction and effect of wind and all the autumnal migratory movements of the lower-flying birds, so many of which come in from the sea or shoot down from the clouds, but in either case make land hereabouts.

Readers of the veteran Herr Gätke's 'Heligoland,' recently translated into English and edited by Mr. Harvie-Brown, will observe the importance which is attached at that ornithological observatory by the author to wind in its bearing on migration, especially in the 5th chapter, "On Meteorological Conditions which influence Migration." He sums up the result of continued personal observation by saying:—"Whereas birds appear in great number when the wind is in a particular direction, they are scarcely seen at all when it is in some other quarter" (p. 74). The particular direction which suits Heligoland may not by any means be the one which brings them to Norfolk. The number of remarkable migrations to Norfolk and the east coast of England generally, which have had no simultaneous counterpart in Heligoland, is very large indeed; therefore there is not that similarity between the two places which some have supposed. In the same way there have been many migrations to Heligoland which could not be correlated with any in England. For instance in October 1870 there were thousands of the Great Tit (*Parus major*) in Heligoland; in 1874 enormous numbers of Shore-Larks (*Otocorys alpestris*); in 1876 tens of thousands of Sky-Larks

(*Alauda arvensis*); in 1879 Red-throated Divers (*Colymbus septentrionalis*) almost by the million; in 1880 countless numbers of the Pied Flycatcher (*Muscicapa atricapilla*); but none of these hosts, so far as was observed, came to England. Other writers besides Herr Gätke have insisted on the importance of wind in its relation to migration, while, by some who have other theories, it has been curiously ignored. By Mr. John Cordeaux its influence was recognized years ago. Writing from the Humber-mouth in 1881, he laid down as an axiom that, "with southerly or westerly winds, not amounting to gales, normal migration [to the east coast in autumn] is the rule, but with winds in the opposite direction the results are very opposite" ('Third Report on the Migration of Birds,' p. 39). Subsequently he seems to have modified his opinions a little as to direction.

Although, when I lived at Cromer, my attention, like Mr. Cordeaux's, used to be directed to all kinds of birds, I exercised special supervision on Gulls (Laridæ), particularly the Herring and Lesser Black-backed Gulls (*Larus argentatus* and *L. fuscus*), the most plentiful and the easiest to watch. I think it will be shown that these Laridæ give a key to what obtains in most other birds, for the wind which suits them,—and I shall show presently that in autumn it is always a contrary wind,—is most acceptable to all species under similar conditions.

To what extent the Laridæ are really birds of passage over the North Sea it would be hard to say, but it has been over and over again remarked that, as regularly as autumn comes round, great numbers of them, chiefly of the two species just named, are to be seen at Cromer *passing along the shore and always flying west*. Many have been the surmises as to their destination and why they should almost invariably adopt the same course and go in the same direction, and several times I have corresponded with Mr. John Cordeaux about this subject. It is fortunate that on the coast of Lincolnshire there should be a naturalist who for a long period of years has made the migration of birds a close study. In 1884 both

Mr. Cordeaux and I, being on the look-out, observed, though not simultaneously, a very great migration of Gulls (albeit the word "migration" is not altogether applicable)—he in Lincolnshire and I in Norfolk. Mr. Cordeaux had his attention drawn to the movement, for that is a better expression, on September 25th, and from that day to the 28th he and his friends were absorbed spectators of very great numbers of Herring- and Lesser Black-backed Gulls flying in the teeth of a strong south-west wind. The passage lasted four days, ten hours each day, and possibly during the night also (see the account of it in the Sixth Report on Migration, p. 65).

A fortnight later, October 11th, very nearly the same thing was to be seen in Norfolk. On that day one of the largest flights passed Cromer and the adjacent village of Overstrand. There had been a very high wind, in fact a gale, in the night from north-north-west, and at 11 A.M. not a single Gull was visible from the cliff. When the great flight or passage of Gulls began I cannot say, but it certainly must have commenced soon after 11 A.M. I did not go to the shore again from that time until 3 P.M., when the wind was still blowing from the west, but greatly moderated, and numbers of Gulls were passing. How many hours they continued going by I do not know; but if they continued filing past for nine hours, 11,880 must have gone by. This is reckoning that a flock passed every minute, and that the average number in a flock was twenty-two. They were chiefly young Herring-Gulls and Lesser Black-backs with some Common Gulls (*L. canus*) and a few adult Great Black-backs (*L. marinus*), and now and then a Black-headed Gull (*L. ridibundus*). All were going in the same direction, west-north-west. The next day the wind was in much the same quarter, but the Gulls had all disappeared. On the 10th (the day before this great flight) the wind had been from the north; on the 9th I believe it was north or north-west, but am not sure, and on the 8th north-north-west. On the 7th it was north-north-east—that is, straight on shore at Cromer, so that Gulls would have no advantage whichever way they went, and accordingly only three were seen; but these three were going in the customary direction, viz. westwards, against the wind.

On the 26th of the same October great numbers of Gulls were again flying west, as before, and, being desirous of gaining an accurate notion of their numbers, I stood for two hours by my watch on the shore at Overstrand and counted them roughly as they passed. In the first hour, commencing at 3.20 P.M., as near as I can say, about 415 passed; in the second hour about 345 passed. They were very close to the shore, and consisted of the same species as before, and were nearly all in flocks of from ten to twenty, but Common Gulls preponderated, with many young Herring-Gulls and Black-backs. At 5.30 their regiments were still defiling past as steadily as ever, and every little company took exactly the same course. How long this had been going on it is impossible to say, but probably from early in the morning, as the wind had been high, and there is every reason to suppose that they continued passing far into the night. The wind was north-north-west. The next day it was still in the same quarter, but there were no Gulls,—for the time they had all passed*.

The following day, October 28th, the wind shifted to west-north-west and blew hard, and Mr. Cordeaux registered a great flight of Woodcocks. Fresh relays of Gulls had come up and were all going west as before. Probably from 2000 to 3000 passed on that day, and pretty nearly 5000 on the 26th. It is a speculation in my mind whether those on the 28th were the same individuals which passed on the 26th or others. The former theory may be accepted on the supposition that they had occupied the 27th in making the return journey, which would have been in an easterly direction, far out to sea; but in that case they must have gone with the wind, which it is quite certain they do not like to do. On the other hand, if they were fresh individuals they had probably come from the shores of Essex and Kent, or from Belgium, and the hundred miles of sea between would furnish its contingent to the army.

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* Some account of this "migration," and other notes on the same subject, will be found in the Norfolk and Norwich Nat. Soc. Trans. iv. p. 326, and in the appendix to Rye's 'History of Cromer.'

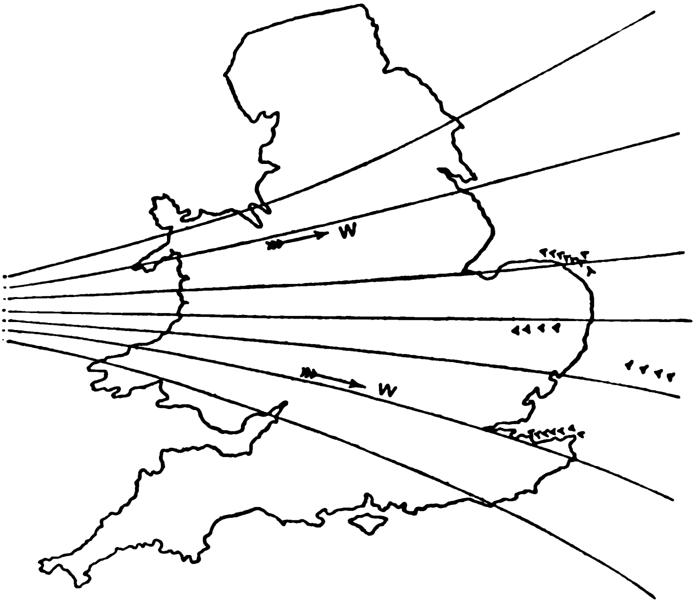
Besides the occasional appearance of Gulls in these great numbers, as in the two instances which have just been related, there may be seen almost every day throughout October and November at Cromer single Gulls and Gulls in twos and threes, and if the wind be west, so invariably is the direction of their flight the same. As a rule they fly high in fine weather and low in bad weather, but be it high or low they always go towards Blakeney, which is a small town and harbour further west, beyond which again is Wells, with wide "binks" and flats, where Col. Feilden has sometimes seen large numbers sheltering themselves.

To show how frequent westerly winds are on the east coast of England, it is only necessary to refer to the meteorological table annually contributed to the 'Transactions of the Norfolk and Norwich Naturalists' Society' by Mr. A. W. Preston, in which the direction of the wind is noted from the vane on the spire of Norwich cathedral. In 1883 we had in Norfolk 173 days of west wind, in 1884 165; but I prefer to give, for comparison, eight years in a tabular statement, as a sample of what generally takes place.

1883	....	W. 173 days.	1887	....	W. 186 days.
1884	....	W. 165 „	1888	....	W. 171 „
1885	....	W. 147 „	1889	....	W. 180 „
1886	....	W. 170 „	1890	....	W. 191 „

Nor is the west wind confined to England alone: all round the globe it is the prevailing wind north of lat. 30°, and doubtless the Gulls of the Atlantic often fly against it or commit themselves to its mercy and allow themselves to be whirled away with it. Mr. Harvie-Brown says west wind was unusually prevalent in Scotland in 1884, when I saw this great "migration" or westward movement. From lat. 30° southwards to the equator north-east winds prevail round the globe, and probably the direction of flight is reversed by these birds, which, it may be, go east when they get into these "trade winds." Birds of any kind seldom cross the North Sea to Norfolk in spring, which is just what we should expect, because in the months of April and May we have not much west wind—see Mr. Preston's tables before referred to.

It may be laid down as a law that the direction of the wind is the key to the movements, not only of Gulls, but of all birds which migrate at a low altitude, and especially those which journey by day, such, for example, as *Corvus cornix, C. frugilegus, C. monedula, Alauda arvensis, Fringilla cælebs, Sturnus vulgaris, Scolopax rusticula, Accipiter nisus,* and *Falco tinnunculus.* These and many others in Norfolk, and especially near the coast, prefer in autumn to go against the wind if it is not too strong, and generally do so. The annexed map will make my meaning more plain, as it shows



Tracks of birds flying against a west wind.

the wind from the west, the bending outline of our coast, and the course taken by the Gulls. When these have flown as far as the salt water goes, I believe they generally settle in such estuaries as the Humber-mouth, the Wash, and the mouth of the Thames; but land-birds, *e. g.* Crows and Larks, indicated on the map by the larger dots, go inland, still, in most cases, flying against the wind.

In my humble opinion it is the west winds of autumn which bring the Pectoral Sandpiper (*Tringa maculata*), Sabine's Gull (*Xema sabinii*), and many other North-American birds enumerated in Saunders's Manual—especially among the Scolopacidæ—to the east coast of the British Isles, instead of landing them in Ireland, which is much nearer to the United States. Or, if Sabine's Gull does occur in Ireland, it is on the east side, as all the records show, where it has a wind to fly against. Certainly if it were not for the west wind there would not be that annual east-to-west autumnal migration which there is to Norfolk and on the east coast of England generally. The direction taken by the birds would be changed if the prevailing winds blew from any other quarter than west, for they like flying against it, account for it how we may, though it is not to be denied that there are now and then exceptions. But a cause for such may be guessed at, if sought for. If the birds did not fly against the wind they would often be carried away by it.

On the other hand, a gale of moderate strength, from whatever quarter, has a very different effect, bearing all the sea-birds and land-birds alike before it if strong, and for the smaller land-birds a very slight puff will suffice. The memorable flight of Blue-throats (*Cyanecula suecica*) to the coast of Norfolk in September 1884 was considered by those on the spot to be immediately after an east wind increasing in force and very gusty, which the Blue-throats must have flown with, and not against. The vast incursion of Gold-crests (*Regulus cristatus*) in the autumn of 1882, which extended far beyond the limits of Norfolk, and was "like a snowstorm" in Heligoland, was pretty clearly shown to be owing to high winds from the east. The 60 Little Gulls (*Larus minutus*) recorded by the late Henry Stevenson in 1870 were drifted in before the violence of a north-east gale, and so were the Pomatorhine Skuas (*Stercorarius pomatorhinus*) in October 1879. Gales like these, and hurricanes like that described by Mr. A. C. Chapman in 'The Naturalist' for February 1886, must be taken into account by those who would study the movements of birds; but these phenomena somewhat complicate the subject of migration, and, by their irregularity, make the problem more difficult to be understood.

It may be broadly said that the two great factors in avian migration are the direction of the wind and food; and of these the former is much the more potent, inasmuch as wind continually retards migration a good deal more than it helps it. Few will be found to deny that birds on migration move fast or slow according to its velocity, and certainly they move on or go backwards according to its direction. Before long the wind drops, and the wished-for night of stillness comes, which, to the smaller feathered pilgrims especially, must be most welcome. Then, as Herr Gätke tells us —in the results of a life's observation now for the first time made accessible to English readers—they rise high in air, often probably to an immense height, and speed away south at one hundred miles an hour (Swallows are said to do 200), and in nine hours they are in Africa.

This is evidently what happens to the multitudes of Scandinavian migrants which come across the North Sea to the British Isles in autumn. If they always continued flying west they would find themselves in the Atlantic (and a recent case was mentioned in 'The Field' newspaper in which that actually happened to some Rooks), but they wait their opportunity and then they go south.

XXXV.—*On a new Species of Babbler* (Turdinulus guttaticollis) *from the Miri Hills to the North of Assam.* By W. R. Ogilvie Grant.

While engaged in identifying and incorporating Col. H. H. Godwin-Austen's collection of birds which has recently been added to the National Collection, I came upon four examples of an extremely distinct little Babbler. They were amongst a couple of boxes of skins collected by Mr. William Robert in the Miri Hills, and, as this part of the collection had never been properly examined, it is not surprising that so small and inconspicuous a bird should have been overlooked. The Miri Hills are the range to the north of Sadiya, running nearly at right angles to the Mishmi Hills, which lie to the east. The nearest ally to the Miri bird is Robert's Babbler (*Turdinulus roberti*), which was discovered by the same naturalist in the Manipur Hills and described by Lord Walden and Col. Godwin-Austen in 'The Ibis' for 1875, p. 252, under the name of *Pnoëpyga roberti*. The latter species also occurs in Tenasserim, and the late Mr. W. Davison remarked that it was generally met with hopping about on the ground or among the undergrowth in the densest portions of the forest, and would not take wing unless hard pressed.

The chief characteristics by which the present species may be distinguished from its more southern ally are the white throat and fore neck *spotted with black*, and the generally dark brown colour of the upper parts and flanks. I therefore propose to call it

Turdinulus guttaticollis, sp. n.

Adult. Top of the head and mantle dark brown, each feather indistinctly margined with blackish, those of the mantle with pale shafts; lower back similarly coloured, but with a distinctly rufous tinge; wings dark brown, each of the longer coverts and inner secondary quills with a wedge-shaped white spot at the extremity. Lores and superciliary stripes pale rufous white; ear-coverts brown; chin and middle of throat and neck pure white, becoming rusty white on the sides and all spotted with triangular black spots; the rest of the underparts are pale whitish buff, with dirty buff margins, shading into brownish on the sides and flanks. Tail dark brown. Total length 3·5 inches, wing 2·2, tail 1·1, tarsus ·9, bill from gape ·7.

Habitat. Miri Hills, Assam.

XXXVI.—*On the Birds of the Philippine Islands.*—Part V.[*] *The Highlands of the Province of Lepanto, North Luzon.* By W. R. Ogilvie Grant. *With Field-Notes by* John Whitehead.

(Plates XII.–XIV.)

The second collection formed by Mr. Whitehead in the Benguet district, teeming as it was with novelties and rare birds, is, as a whole, far surpassed in interest by the great collection now sent home from the Province of Lepanto. This lies immediately to the north of the scene of his former labours, and includes what is believed to be the highest part of Luzon, Mount Data attaining an elevation of over 8000 feet. Unfortunately Mr. Whitehead has furnished us with only a somewhat vague account of his various movements, but I believe I am correct in stating that the whole of the present collection, or very nearly all of it, was made in the Lepanto district. As we ornithologists look at the drawers full of perfect bird-skins, not a bad or soiled specimen among the lot, and remember the many difficulties under which they have been collected, we are filled with admiration for the wonderful energy and ability of this collector, who has proved himself to be one of the best, perhaps the best, of the field-naturalists of his time, at a time when the study of bird-life has reached such a pitch of perfection that ornithologists are no longer content with indifferently collected specimens devoid of exact particulars, but expect not only perfect specimens, with the sex correctly ascertained by dissection, and the exact locality and date of capture, but also field-notes on the habits. Though Mr. Whitehead takes copious and excellent notes on the last subject, he tells us he is keeping them for the book that he intends to publish on his return home, which will no doubt be as intensely interesting as his former work on the exploration of Kina Balu. We cannot help thinking, however, that the delay in publishing these valuable notes, which cannot fail to be of the greatest interest, is a mistake, as such information would greatly enhance the value of the papers published on his collections, which are at present, of necessity, somewhat dry reading, dealing, as they do, merely with the birds from a scientific point of view. Mr. Whitehead possesses the real "collector's eye," without which the field-naturalist is nowhere, and this enables him to see and shoot all sorts of curious little warblers and small ground-birds, which the majority of ordinary collectors miss altogether or stumble on by accident: such birds, for instance, as *Androphilus accentor* and *Pseudotharrhaleus caudatus.*

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[*] For Part I. see Ibis, 1894, pp. 406–411; Part II. *ibid.* pp. 501–522; Part III. Ibis, 1895, pp. 106–117; Part IV. *ibid.* pp. 249–267.

In a letter dated 11th October, 1894, Mr. Whitehead told us he was about to leave Manilla for the northern highlands in the beginning of November, his intention being to go inland much further to the north than he had been before and to collect in the lower forests first, gradually working up into the high mountains. He expected to find a Jay of some sort, having noticed a species of oak growing there, but no bird of the kind was met with, and probably it does not exist, for had it done so he would no doubt have come across it. As soon as this collecting-ground appeared to be exhausted, his idea was to proceed to Apari, on the north coast of the island, and visit a large forest seen during his somewhat unfortunate expedition in May of 1894, when, owing to the perfidy of his collectors, he found himself practically single-handed in a most difficult country. We gather, however, that he found too many objects of interest in Lepanto to necessitate his making this long journey of over 100 miles as the crow flies.

On the 20th of December, a very interesting letter from the north mentioned in detail his most interesting captures.

At this time he was living in a miserable plank-hut, and, being very ill from dysentery, was writing from his bed as being the warmest place he could find. The weather was then wet and misty, with a north-east wind, and the nights very cold, the glass sometimes showing a temperature of 49°. Little or no fresh food was to be had, an occasional pig being the greatest luxury obtainable; whilst he was writing one could be heard squealing outside the door of his house, waiting to be purchased for the moderate sum of five shillings. In this letter he described the Crimson-spotted Racquet-tailed Parrot (*Prioniturus montanus*) and a pair of Marche's Fruit-Pigeon (*Ptilopus marchii*), both of which he believed to be new; the latter had, however, already been described by M. Oustalet from the type—then unique—in the Paris Museum.

On the 16th of February he announced his intention of returning to the coast, and visiting on the way a place where he hoped to procure further examples of the new Oriole (*Oriolus albiloris*), of which a single female—the type—had already been procured during his second expedition to the Benguet district. In a later letter, however, written from Manilla on the 14th of March, he says "I utterly failed to meet with *O. albiloris* again," which was very unfortunate, as it would have been extremely interesting to ascertain the plumage of the male. We were pleased to learn that he was then once more in good health, the cold in the high mountains, where there was often 2° or 3° of frost in the night, having completely restored him.

It had been Mr. Whitehead's intention to visit the Marianne Islands, starting from Manilla about the 20th of April, but the steamer that had been running had been taken off and a thoroughly unseaworthy boat substituted, so he deemed it prudent to alter his plans, and returned to the north of Luzon with the intention of working the east-coast range. The country is there much more difficult than the Lepanto district, for there are no roads, and porters are not to be had, so it remains to be seen what success he will meet with.

In the present collection special interest attaches to the Marche's Fruit-Pigeon, mentioned above, and Koch's Pitta (*Pitta kochi*). The latter was for many years known only from the type in the Darmstadt Museum, and since it was described only one immature example has been recorded—the specimen obtained by M. Marche, and now in the Paris Museum. Of both these extremely rare birds of unrivalled beauty Mr. Whitehead has procured young and adult specimens. The novelties include a very large Short-eared Owl (*Scops whiteheadi*), the largest species known to inhabit the Old World; a beautiful Flycatcher (*Rhinomyias insignis*) (see Plate XII. fig. 2), which, curiously enough, is more nearly allied to *R. gularis*, discovered by the same collector on Kina Balu, than to the new species described by Messrs. Bourns and Worcester from other intermediate Philippine Islands. Thirdly, we have Seebohm's Bush-Warbler (*Lusciniola seebohmi*), most closely allied to the Himalayan species *L. mandellii* and *L. luteiventris*. Fourthly, there is the beautiful little Short-wing (*Brachypteryx poliogyna*) (see Plate XII. fig. 1), which is also nearest the Kina Balu species *B. erythrogyna*, but, as its name (grey female) implies, the female has the underparts bluish-grey instead of rust-red. The fifth new species is the extraordinary Hedge-Sparrow-like bird (*Pseudotharrhaleus caudatus*) (see Plate XIII.), with its very short rounded wings and long pointed tail; here again the nearest known ally is the equally curious *Androphilus accentor* from Kina Balu. A lovely Silver-eye comes next, with greenish-yellow back and golden-yellow underparts and lores (*Zosterops aureiloris*). The new White-cheeked Bullfinch (*Pyrrhula leucogenys*) which follows is quite as wonderful a discovery as was the Crossbill first met with in the Benguet district, and also deserves special attention. Both sexes are beautifully figured by Mr. Keulemans in Plate XIV., which accompanies this paper. A large species of Swiftlet (*Collocalia whiteheadi*) is nearly allied to *C. lowi*, but has the tail very distinctly forked and the tarsi naked. The ninth novelty is a small species of Frog-mouth (*Batrachostomus microrhynchus*), remarkable, as its name implies, for its comparatively small bill, which is about half the size of that of the allied species from the islands of Mindanao and Panay. Lastly, there is the Crimson-spotted Racquet-tailed Parrot mentioned above, which makes the third species of the genus *Prioniturus* known to inhabit Luzon. Besides these, additional specimens of all the previously described novelties from Benguet, except the Oriole already alluded to, are included in the present collection, and the female of the hitherto unique Water-Redstart (*Chimarrhornis bicolor*) has now been discovered and is described below.

The mammalian fauna of this wonderful district is, if possible, more surprising than the ornithology, and Mr. Oldfield Thomas, of the Natural History Museum, will shortly give a detailed account of the numerous new forms Mr. Whitehead met with; many being referred to new genera, while a particularly curious rat finds its nearest ally in an Australian species! The Lepanto collections contain, besides the mammals and birds, some reptiles, which have not yet been examined, and boxes of insects, as well as a number of dried plants, which will probably prove as interesting as the rest of the specimens that our indefatigable friend has sent home.

We feel sure that all the readers of 'The Ibis' will join in offering Mr. Whitehead hearty congratulations on his success and in wishing him good health to continue his work.

1. Circus spilonotus, Kaup; Sharpe, Cat. B. Brit. Mus. i. p. 58 (1874).

An immature male of this handsome Harrier was obtained.

2. Circus melanoleucus (Forst.); Sharpe, Cat. B. Brit. Mus. i. p. 61 (1874).

The Pied Harrier is represented in the present collection by adult male and female specimens; and on comparing the latter with Professor Steere's description of *Circus philippinensis* from Mindanao, Guimaras, and Luzon, there can be little room to doubt that this supposed species is founded on the female of *C. melanoleucus*, for his description agrees in almost every particular.

3. CIRCUS ÆRUGINOSUS (Linn.); Sharpe, Cat. B. Brit. Mus. i. p. 69 (1874).

Mr. Whitehead has obtained an immature male which is undoubtedly referable to the present species. Dr. Sharpe formerly recorded this species from the Philippines, but he subsequently showed that the immature Harriers obtained by Cuming were the young of *C. spilonotus*, so the Marsh-Harrier is now recorded for the first time from this group. Its large size and the great length of the tarsus render it easily recognizable from the young of *C. spilonotus*, although the immature plumage of the two birds is very similar. Wing 16·3 inches, tarsus 3·8.

4. ACCIPITER MANILLENSIS (Meyen); Grant, Ibis, 1894, p. 503.

Another adult female of the Manilla Sparrow-Hawk, similar to those obtained in the second expedition to Benguet.

5. LOPHOTRIORCHIS KIENERI (Geoffr. St.-Hil.); Sharpe, Cat. B. Brit. Mus. i. p. 255 (1874).

An immature example of this Crested Eagle has the underparts almost entirely pure white, with only a few blackish brown-edged shaft-spots on the sides of the chest, breast, and flanks.

6. BUTASTUR INDICUS (Gm.); Grant, Ibis, 1894, p. 503.

An adult female of the Philippine White-eyed Buzzard.

7. HALIASTUR INTERMEDIUS, Gurney; Grant, Ibis, 1894, p. 407; 1895, p. 251.

A fine adult male of the Eastern Maroon-backed Kite.

8. MICROHIERAX ERYTHROGENYS (Vig.); Grant, Ibis, 1894, p. 407.

An adult male of this pretty Falconet has the inner webs of the primaries barred with white.

9. FALCO ERNESTI, Sharpe, Ibis, 1894, p. 545 [Mt. Dulit and the Lawas River, Borneo, and Luzon, Philippine Islands].

It is extremely interesting to find that Dr. Sharpe was perfectly correct in referring the immature female example obtained by Mr. Maitland-Heriot in Manilla to this very dark-coloured subspecies of the Peregrine Falcon. Mr. Whitehead has now forwarded a fully adult male from Lepanto, in North Luzon, which is perfectly similar in plumage to the male bird (the type of the species) found breeding by Mr. Ernest Hose on Mount Dulit at an elevation of 4500 feet. I have reason to believe that Mr. Whitehead's specimen was obtained at an even greater altitude, but I have unfortunately received no particulars. Like the type, the Luzon example is an old male in the fullest adult plumage, with the chest less brightly coloured than in a second Bornean example obtained by Mr. Pretyman on the Lawas River (see Gurney, Ibis, 1882, p. 302). Dr. Sharpe expressed the opinion that this very dark Peregrine would be found to represent a resident form inhabiting the Indo-Malayan Islands; and no doubt this is the correct view of the case, for we find that an adult male obtained by Mr. Wykeham Perry at Malikollo, New Hebrides, is certainly referable to the present race and not to the allied *Falco melanogenys* from Australia.

10. FALCO SEVERUS (Horsf.); Sharpe, Cat. B. Brit. Mus. i. p. 397 (1874).

A fully adult male of the Indian Hobby is now recorded for the first time from Luzon, though the species has been previously obtained in the more southern islands of the group.

11. CERCHNEIS TINNUNCULUS (Linn.); Sharpe, Cat. B. Brit. Mus. i. p. 425 (1874).

This is the first time that the Kestrel has been recorded from the Philippine group. The only specimen sent is an immature male in plumage similar to that of the female, and, as one would expect, it belongs to the darkest eastern form of the Kestrel found in China and Japan, which has been named *Tinnunculus japonicus* by Temminck and Schlegel [in the 'Fauna Japonica,' p. 2, pls. 1 & 1 B (1842)].

12. SCOPS LONGICORNIS, Grant, Bull. B. O. C. iii. p. li (1894); id. Ibis, 1894, p. 504.

Mr. Whitehead has now obtained a second example of this extremely beautiful little Owl, which is easily recognizable by its very long ear-tufts and partially naked tarsi. It appears to be rather an older specimen than the type, and though otherwise extremely similar in plumage, the sides of the face, top of the head, and upper parts are somewhat darker. The measurements of the present bird are almost identical with those of the type. I regret that, owing to a slip of the pen, the length of the tarsus (see Ibis, 1894, p. 504) is given as "2·15" instead of 1·15 inches. This bird appears to be very scarce, and is said to be extremely difficult to obtain.

13. SCOPS WHITEHEADI, Grant, Bull. B. O. C. iv. p. xl (1895).

After his return from the Benguet district, Mr. Whitehead wrote to me:—"There is a bird, animal, or devil that makes the most curious noise at dusk. I think it must be a large Owl, but, though often out after it, I never got near even to the place where the noise came from." Writing again last February, he says:—"I have a fine large *Scops*, the bird that makes the curious demon-like cry at night."

In addition to several adult specimens of both sexes, he sends a very young Owlet, which is apparently the young of this species, as the tarsi are feathered and it bears the same date (14th February, 1895) as one of the females, and was doubtless her offspring.

This remarkably fine new species is most nearly related to *Scops everetti* of Tweeddale, from the island of Mindanao, but it is very much larger, and is, in fact, the largest *Scops* at present known to inhabit the Old World. The feathering on the tarsi extends over the basal joints of the toes; the light cross-bars on the inner webs of the quills are much less conspicuous; and the middle of the lower breast and belly is uniform whitish buff, in marked contrast to the sides.

Both the grey and rufous phases of plumage are represented.

Adult ♂. Total length 9·5–10 inches, wing 7·3–7·4, tail 3·6–3·7, tarsus 1·65.

Adult ♀. Total length 11·0–11·4 inches, wing 7·7–8·0, tail 3·9–4·0, tarsus 1·65–1·9.

Types of *Scops everetti*:—

Adult ♂. Total length 7·7 inches, wing 6·3, tail 2·7, tarsus 1·47.

Adult ♀. Total length 9·2 inches, wing 6·8, tail 3·25, tarsus 1·55.

14. Ninox philippensis, Bonap.; Sharpe, Cat. B. Brit. Mus. ii. p. 167 (1875); Steere, List Birds & Mamm. Philippines, p. 8 (1890); Bourns & Worcester, Occas. Papers Minnesota Acad. i. no. 1, p. 33 (1894).

An adult male of the Philippine Hawk-Owl was obtained for the first time in the present collection from Lepanto, and, as this is the only example that Mr. Whitehead has met with during nearly two years spent in Luzon, we may safely assume that it cannot be a common bird in that island.

15. Dicrurus balicassius (Linn.); Grant, Ibis, 1894, pp. 408, 505; 1895, p. 252.

Two very fine freshly-moulted male examples of the Crow-billed Drongo.

16. Edoliisoma cærulescens (Blyth); Grant, Ibis, 1894, p. 505.

The male and female of this Cuckoo-Shrike are perfectly similar to the examples previously received from the Benguet district.

17. Pericrocotus cinereus, Lafr.; Grant, Ibis, 1894, pp. 408, 505.

The Ashy Minivet, probably on migration.

18. Lalage terat (Bodd.); Grant, Ibis, 1895, p. 252.

An adult pair of the Pied Cuckoo-Shrike are represented.

19. Muscicapa griseisticta (Swinh.); Grant, Ibis, 1894, p. 408; 1895, p. 252.

A fine adult pair of this Flycatcher obtained towards the end of November.

20. Pratincola caprata (Linn.); Grant, Ibis, 1894, p. 505.

A pair of the Pied Bush-Chat shot in the middle of November.

21. Muscicapula westermanni, Sharpe; Grant, Ibis, 1894, p. 506.

There is a nice series of the Mountain Pied Flycatcher in the present collection, and all the females have the grey upper parts characteristic of the species, as defined by Dr. Sharpe, differing conspicuously from the much browner females of *M. maculata*.

22. Hypothymis azurea (Bodd.); Grant, Ibis, 1894, pp. 408, 506.

The Black-naped Flycatcher.

23. Rhinomyias insignis. (Plate XII. fig. 2.)

Rhinomyias insignis, Grant, Bull. B. O. C. iv. p. xl (1895).

Adult male and female. The sexes of this extremely handsome Flycatcher are perfectly similar to one another in plumage, and most nearly resemble *R. gularis*, Sharpe, from Kina Balu, though the differences are remarkably striking. Upper parts olive, washed with sienna on the rump, upper tail-coverts, and tail; the superciliary stripes, chin and throat-patch, middle of lower breast and belly, and under tail-coverts pure white; lores and fore part of the cheeks blackish; rest of cheeks, ear-coverts, and sides of throat olive washed with rufous, the latter colour gradually increasing in intensity on the chest and upper breast, and becoming clear rust-red on the sides and flanks. Quills washed with reddish olive instead of sienna.

Adult ♂. Total length 6·4 inches, wing 3·5, tail 2·6, tarsus 1·1.

Adult ♀. Total length 6·3 inches, wing 3·4, tail 2·5, tarsus 1·1.

This species is evidently distantly related to *R. albigularis*, from Negros and Guimaras, and *R. ocularis*, from Sulu and Tawi Tawi, described by Messrs. Bourns and Worcester, Occas. Papers Minnesota Acad. i. no. 1, pp. 27, 28 (1894). It resembles both these species in having the middle of the throat, belly, and under tail-coverts white, but may be at once distinguished by the strongly marked white superciliary stripes and clear rust-red of the sides and flanks.

24. Culicicapa panayensis (Sharpe); Grant, Ibis, 1894, p. 506.

Further examples of the Yellow Panayan Flycatcher from Lepanto are similar to those from the Benguet district and Negros.

25. Cryptolopha nigrorum, Moseley; Grant, Ibis, 1894, p. 506.

Similar to those already received from Benguet, and identical with the type of this little Yellow Flycatcher from Negros.

26. Stoparola nigrimentalis, Grant, Ibis, 1894, p. 507, pl. xiv. fig. 2.

Additional examples of this handsome new black-chinned Flycatcher are included in the present collection. One female has the vent and under tail-coverts white, conspicuously washed with buff; in this respect approaching *S. cerviniventris*, Sharpe, from N. Borneo, and *S. ruficrissa*, Salvad., from Sumatra, but the colour of these parts is paler in the specimen of *S. nigrimentalis* before me.

27. Siphia philippinensis (Sharpe); Grant, Ibis, 1894, pp. 408, 507.

Male examples of the Philippine Red-breasted Flycatcher were obtained in the month of November.

28. Phylloscopus borealis (Blas.); Grant, Ibis, 1894, pp. 408, 507.

The Arctic Willow-Warbler on migration.

29. Acrocephalus orientalis (Temm.); Seebohm, Cat. B. Brit. Mus. v. p. 97 (1881).

On the 15th of November the Chinese Great Reed-Warbler was obtained.

30. Lusciniola seebohmi, Grant, Bull. B. O. C. iv. p. xl (1895).

Seebohm's Grass-Warbler belongs to the section of the genus *Lusciniola*[*] in which the first primary is half or more than half the length of the second, the sides of the head and ear-coverts brown, the throat pure white and devoid of spots, and the tail considerably longer than the wing.

Clearly the nearest allies to this species are *L. luteiventris* and *L. mandellii*. In these three species the wing-formula is as follows:—

L. luteiventris. 4th quill slightly longer than (rarely subequal to the 5th; 3rd intermediate between 5th and 6th.

L. mandellii. } 5th somewhat longer than the 4th and 6th,
L. seebohmi. } which are subequal, and distinctly longer than the 3rd.

The present species differs from both its allies in having the general colour of the upper parts browner, the white on the chin and throat more extensive and shading into greyish on the sides of the neck; while the sides and flanks are more greyish brown in tint and but slightly washed with buff; the lower mandible appears to have been yellowish white, as in *L. luteiventris*.

Total length 5·8 inches, wing 2·0, tail 2·5, tarsus 0·8, middle toe and claw 0·75.

31. Cettia seebohmi, Grant, Ibis, 1894, p. 507.

The present collection contains several additional examples of Seebohm's Bush-Warbler, and in all, as in the typical examples from Benguet, the sixth primary is the longest and slightly longer than the fifth. One male example is darker and larger than the rest, the top of the head and back being brown washed with rufous, and more nearly approaching the colour of the wings; the length of the wing is 2·3 inches, while in the other examples it does not exceed 2·1. There can, however, be no doubt that this bird is specifically identical with *C. seebohmi*.

32. Cettia canturiens (Swinh.); Grant, Ibis, 1894, p. 508.

A pair of the Chinese Bush-Warbler were obtained in January and February.

[*] According to Mr. Oates the proper name for this genus is *Tribura*.

32*a*. GEOCICHLA VARIA (Pall.); Seebohm, Cat. B. Brit. Mus. v. p. 151 (1881).

White's Ground-Thrush was met with on migration between the 15th December and the 8th of February. It has previously been recorded several times from Luzon.

33. MERULA THOMASSONI, Seebohm; Grant, Ibis, 1894, p. 508.

Additional specimens of Thomasson's Blackbird, which is a very well-marked species, have been sent in the present collection. Young male and some female examples have the feathers of the lower breast and belly rather widely edged with light red, but are otherwise similar to the young previously received from Benguet, having rather wide white shafts to the under tail-coverts and the præanal feathers tipped with white.

34. MERULA OBSCURA (Gmel.); Seebohm, Cat. B. Brit. Mus. v. p. 273 (1881).

Two males of the Dark Ouzel were obtained in the district of Lepanto—a younger male on the 18th of December and an adult bird on the 6th of February.

35. MERULA CHRYSOLAUS (Temm.); Seebohm, Cat. B. Brit. Mus. v. p. 275 (1881).

The Brown Japanese Ouzel was met with between the 17th December and 24th of January, when several examples of both sexes were obtained.

36. CALLIOPE CAMTSCHATKENSIS (Gmel.); Grant, Ibis, 1894, p. 508.

Previously Mr. Whitehead had ootained only male examples of the Ruby-throated Robin in the Benguet district; the present collection contains examples of both sexes.

37. IOLE PHILIPPENSIS (Gmel.); Grant, Ibis, 1894, pp. 408, 509.

The Philippine Streaked Bulbul is again represented.

38. Pycnonotus goiavier (Scop.); Grant, Ibis, 1894, p. 408; 1895, p. 253.

A pair of this Yellow-vented Bulbul was obtained in November.

39. Brachypteryx poliogyna. (Plate XII. fig. 1 [♀].)

Brachypteryx poliogyna, Grant, Bull. B. O. C. no. xxviii. p. xl (1895).

In a letter dated the 20th of December, 1894, Mr. Whitehead informed me that he had obtained the male of a species of Shortwing (*Brachypteryx*) very similar to the male of the species (*B. erythrogyna*) he discovered on Mt. Kina Balu: having only obtained the male, he could not say whether it really differed from the North-Bornean bird, but suggested that it might be distinct. Writing on the 16th of February, he remarked:—"The female of the *Brachypteryx* is quite different from the Kina Balu one, the head and throat only being yellowish brown, while the breast is blue, much like that of the male."

As Mr. Whitehead observes, this species is remarkably different from anything previously known.

Adult male. Closely resembles the male of *B. erythrogyna*, Sharpe, from Kina Balu, but the general colour of the plumage is somewhat darker and less blue. Total length 5·5 inches, wing 2·6, tail 1·9, tarsus 1·25.

Adult female. Crown of the head umber-brown, washed with sienna on the forehead and shading into more olive-brown on the neck; cheeks, chin, and throat rufous-buff, shading into paler buff on the fore-neck. Rest of the plumage as in the male. Total length 5·4 inches, wing 2·5, tail 1·75, tarsus 1·2.

The female of *B. erythrogyna* is extremely different: the whole of the underparts being rufous-chestnut and the rump and upper tail-coverts reddish brown, like the crown and nape.

40. Chimarrhornis bicolor, Grant, Ibis, 1894, p. 509, pl. xv. fig. 2.

It will be remembered that in the second collection of [illegible] and

[illegible] perfectly

[illegible]

38. PYCNONOTUS GOIA [illegible] 94,
p. 408. [illegible]

in

and feeble, the 1st primary being much the shortest, the 4th about equal to the 10th, and the 5th to the 8th subequal and longest. The plumage is soft and loose, especially of the flanks and tail-coverts, and the webs of the tail-feathers are decomposed, while the shafts are decidedly stiff, somewhat recalling the Dendrocolaptine genus *Synallaxis*.

I have unfortunately received no particulars regarding the capture of this very remarkable species; but its general build and structure seem to suggest that the greater part of its existence is spent on the ground beneath thick jungle and cover, its somewhat worn and pointed tail-feathers appearing to have been partially denuded by constant contact with surrounding objects, while its very small wing also seems to betoken extremely limited powers of flight. Both male and female of the Long-tailed Wood-Accentor are perfectly similar in plumage, and may briefly be described as follows:—

Adult male and female. General colour above umber-brown, slightly washed with sienna on the back, rump, and upper tail-coverts; quills brownish black, the outer webs margined with the same colour as the upper parts; a somewhat indistinct supra-orbital stripe of a dirty yellowish white; sides of the throat, neck, and breast dull grey, with a distinct greenish tinge on the former; chin and middle of the throat white, each feather with a greyish middle, giving these parts an indistinctly striped appearance; sides, flanks, belly, and under tail-coverts like the back; tail darker than the rest of the upper parts.

Adult male. Total length 7·5 inches, wing 2·45, tail 3·45, tarsus 1·0, middle toe and claw 0·95.

Adult female. Total length 7·5 inches, wing 2·45, tail 3·4, tarsus 0·9, middle toe and claw 0·85.

48. PARUS ELEGANS, Less.; Grant, Ibis, 1894, pp. 408, 511; 1895, p. 254.

This handsome and universally distributed Philippine Tit was again collected.

49. HYLOTERPE ALBIVENTRIS, Grant, Ibis, 1894, p. 511.

Additional adult examples of both sexes of the Whitebellied Thick-head differ in no wise from the types from the Benguet district.

An *immature male* has many of the feathers of the top of the head and ear-coverts reddish brown, and the outer webs of the secondary quills and some of their coverts are similarly coloured. Probably in the quite young bird the whole of the olive-green plumage of the adult is replaced by reddish brown.

50. LANIUS NASUTUS, Scop.; Grant, Ibis, 1894, p. 512.

Additional examples of this Long-tailed Shrike were obtained in the Lepanto district.

51. LANIUS VALIDIROSTRIS, Grant, Ibis, 1894, p. 512.

The Thick-billed Shrike appears to be a somewhat rare bird, and Mr. Whitehead obtained one or two additional examples with considerable difficulty; these are precisely similar to those collected at Benguet.

52. RHABDORNIS MYSTACALIS (Temm.); Grant, Ibis, 1894, p. 409; 1895, p. 256 (woodcuts).

A few more specimens of the Bridled Flower-Creeper have been received.

53. DENDROPHILA MESOLEUCA, Grant, Ibis, 1894, p. 512; 1895, p. 111, pl. iv. fig 2.

Several specimens of both sexes of the White-backed Nuthatch were obtained in Lepanto and include immature examples; in these the white patch down the middle of the mantle is not very well marked and of a purplish-grey tint, the underparts are much more richly coloured, being mostly pale fulvous with a distinct purple gloss in some lights. In the adult birds the chest and underparts are white, shading into pale buff on the middle of the breast and belly, and all trace of the purplish reflections characteristic of the immature examples is absent. It is only in the most adult examples that the patch in the middle of the mantle becomes mostly pure white—probably this is not altogether assumed until the second or third year.

54. EUDREPANIS JEFFERYI, Grant, Ibis, 1894, p. 513; 1895, p. 111, pl. v. fig. 2.

Examples of Jeffery's Sun-bird from Lepanto are perfectly similar to the types from Benguet, the male of which was beautifully figured in the above-mentioned plate.

55. CINNYRIS WHITEHEADI, Grant, Ibis, 1894, p. 514, pl. xiv. fig. 1.

Mr. Whitehead has now succeeded in obtaining a nice series of this beautiful Sun-bird, of which only a pair were obtained in the second expedition to Benguet, and the immature males and females differ from the female adult in having the upper parts grey instead of olive-green. Young males have the underparts much like those of the female adult, but the scarlet feathers of the lower breast and belly, the metallic feathers on the top of the head, lower back, rump, and upper wing-coverts, as well as the black feathers of the scapulars, wing-coverts, and secondaries, are partially represented.

56. CINNYRIS JUGULARIS (Linn); Grant, Ibis, 1895, p. 255.

Having now obtained an additional series of this Sun-bird from Lepanto, which lies immediately to the north of Benguet, I am inclined to believe that the birds on which I founded *Cinnyris obscurior* are in reality merely worn examples of *C. jugularis.* The Benguet birds are certainly remarkably small and pale in colouring, and, when compared with specimens from Albay district and the island of Catanduanes, appeared very different, though it must be added that examples from the latter localities were all freshly-moulted specimens. The birds from Lepanto, collected during the month of November, bridge over the differences in size between typical *C. jugularis* and the types of *C. obscurior*, being also intermediate in colouring, so that on the whole I consider *C. obscurior* to have been founded on rather smaller examples of *C. jugularis* in worn plumage.

57. ANTHOTHREPTES GRISEIGULARIS, Tweedd.; Grant, Ibis, 1894, p. 111.

We observe in Messrs. Bourns and Worcester's list of "new Localities for Species previously known from the Philippine Islands" that Samar is mentioned as an additional locality for the Grey-throated Sun-bird.

Mr. Whitehead obtained a fine adult pair in Lepanto in the beginning of December. It is evidently a rare bird.

58. ZOSTEROPS MEYENI, Bonap.; Grant, Ibis, 1894, p. 515.

When Dr. Sharpe prepared his monograph of this difficult genus, which was published in vol. ix. of the Catalogue of Birds, forming a pleasant oasis in the midst of its pages, the Museum collection contained three examples of a greenish-olive *Zosterops* from the Philippines, which were referred by Dr. Sharpe to *Zosterops meyeni*, Bonaparte, a species founded on *Dicæum flavum*, Kittl., Kupfert. Vög. Heft i. p. 15, pl. 19. fig. 2 (1832). This was certainly a mistake, for the true Meyen's Silver-eye (*Z. meyeni*) has the breast and belly pure white, whereas the Museum specimens come into section C of Dr. Sharpe's key, which have the "throat yellow like the rest of the under surface; flanks yellow like the abdomen, or only a little greener or more olive." The three specimens certainly all belong to the same species, but I have been much puzzled to know to what species to refer them if they belong to any described form. They appear to be most nearly allied to *Z. nigrorum*, Tweedd., and to the birds that I named *Z. luzonica*, which were obtained at the foot of the Mayon volcano, in the Albay district of South-east Luzon. Both these species are, however, much brighter green above; the three Museum specimens (named *Z. meyeni*) having the upper parts of a dull olive-green, rather brighter on the forehead and upper tail-coverts, and the underparts dull whitish yellow, brighter on the throat and fore-neck and olive on the sides and flanks, much as in *Z. nigrorum*. They are, moreover, very small birds, the wing being 1·9 inch, and the labels are devoid of any very definite information, one being marked "Manilla, Gould Coll.," and the two other "Philippine Isl., Hugh Cuming, Esq. [C.]." The three specimens certainly appear different from any of those with which I have compared them, but it would be dangerous, with such scanty material, devoid of exact locality, &c., to describe them as new.

59. Zosterops aureiloris, Grant, Bull. B. O. C. no. xxviii. p. xl (1895).

This beautiful species is most nearly allied to *Z. luzonica*, Grant, from the Mayon volcano, in the Albay district, but is distinguished by its altogether brighter plumage above and below, and by the brilliant golden-yellow frontal band, which forms a conspicuous patch on the lores and in front of the eyes.

Adult male. Total length about 4·5 inches, wing 1·85–2·05, tail 1·4–1·5, tarsus 0·6.

Adult female. Total length about 4·5 inches, wing 1·95–2·05, tail 1·4–1·5, tarsus 0·6.

Z. luzonica (types). Total length about 3·8 inches, wing 1·8, tail 1·4, tarsus 0·6.

In younger examples the golden patch on the lores is much less brilliant.

60. Dicæum rubriventer, Less.; Grant, Ibis, 1895, p. 258.

We have received both sexes of this beautiful little Flower-pecker, and the male and female are absolutely alike in plumage, the red stripe down the middle of the abdomen being equally represented in the latter.

61. Dicæum luzoniense, Grant, Ibis, 1894, p. 415.

Adult males of this very handsome Red-breasted Flower-pecker are in the present collection from Lepanto. As is the case with so many of the small birds of this kind, the males are much more frequently obtained than the females, probably because they are more brightly coloured, and therefore more conspicuous.

62. Dicæum pygmæum (Kittl.); Grant, Ibis, 1894, p. 515.

The Pigmy Flower-pecker is also represented in the Lepanto collection, and both sexes were again obtained.

63. Dicæum xanthopygium, Tweedd.; Sharpe, Cat. B. Brit. Mus. x. p. 40 (1885).

Since Lord Tweeddale described the Yellow-rumped Flower-pecker from Luzon it has been recorded by Prof. Steere from Mindoro. Mr. Whitehead has now obtained the adult female for the first time, and it may be briefly described as follows:—

Adult female. Like the female of *D. dorsale*, Sharpe, but at once distinguished from this as from all the allied species by having the rump bright yellow; it further differs from *D. dorsale* in having the breast and rest of underparts olive-yellow, only a band down the middle of the breast and belly being pure yellow.

I observe that Messrs. Bourns and Worcester have separated the *Cebu* example of the *D. trigonostigma* group from *D. dorsale*, Sharpe, from Panay. Having no series, but only one male bird from each island, I do not presume to say much on the subject, but the differences, even if constant, are extremely slight.

In the Museum collection there is also a male specimen from Catbalogan, Samar, collected in March 1888 by Mr. E. L. Moseley. This specimen appears to be perfectly similar to our specimen of *D. dorsale* from Panay; but possibly this also can be regarded as a distinct species. It is certainly *not D. cinereigulare*, to which Prof. Steere refers the specimen that he obtained from Samar. If our friends in America have a large series of these birds collected in Samar, they may perhaps find that the bird from there is not *D. cinereigulare*, but a distinct representative form.

64. PIPRISOMA ÆRUGINOSUM.

Prionochilus æruginosus, Bourns & Worcester, Occ. Pap. Minnesota Acad. Sci. i. no. 1, p. 20 (1894).

A single male example, without doubt referable to this species of Thick-billed Flower-pecker, was obtained by Mr. Whitehead in the highlands of Lepanto. It should, however, be referred to the genus *Piprisoma*, having nine primaries, the first reaching to the tip of the wing, the tail square, and the nostril perfectly bare of hairs [see Oates, Fauna Brit. India, Birds, ii. p. 375 (1890)]. The adult male specimen before me agrees exactly with the description given of Messrs. Bourns and Worcester's male type. Mr. Rothschild has also recently obtained this bird from Mindoro.

65. HIRUNDO JAVANICA, Sparrm.; Grant, Ibis, 1894, p. 516; 1895, p. 258.

A male of the Javan Swallow was obtained in the month of October.

66. ANTHUS MACULATUS, Hodgs.; Grant, Ibis, 1894, p. 516.

Three male examples of the Spotted Tree-Pipit, obtained in the months of November, December, and January, are in winter plumage and perfectly similar to one another.

67. LOXIA LUZONIENSIS, Grant, Ibis, 1894, p. 516.

Mr. Whitehead has now managed to obtain additional examples of this very interesting little Crossbill, and all the specimens bear out the characters already mentioned in my original description. Among the examples sent are several young and immature birds in the striped plumage, the smallest being mere nestlings, with the wings and tail less than half-grown.

68. PYRRHULA LEUCOGENYS. (Plate XIV.)

Pyrrhula leucogenis, Grant, Bull. B. O. C. xxviii. p. xli (1895).

Almost as surprising as the finding of a new Crossbill in the highlands of Benguet is the discovery of this beautiful White-cheeked Bullfinch, which Mr. Whitehead has had the good fortune to meet with in the high mountains of Lepanto. This interesting novelty, moreover, has the merit of being absolutely distinct from anything previously known, as will be seen by a glance at the extremely pretty plate by Mr. Keulemans, in which both sexes are well shown; the sexes are practically similar in plumage, the only difference being that the male has the outer web of the innermost secondary edged externally with orange-red or crimson, while in the female this margin is brownish orange. Both sexes most nearly resemble the female of *P. kurilensis*, but may be at once recognized by the large white patches on the sides of the head, covering the hinder cheeks and ear-coverts. The upper parts are dull olive-brown, and the underparts are similar, but paler, especially on the lower belly, vent, and under tail-coverts, where the colour shades into buff.

This species also approaches the paler *P. nipalensis*, Hodgs., from the Himalayas, which also has the sexes practically similar in plumage, and shows traces of the white patch behind the eye; but in the latter species the crown is greyish brown, very similar to the rest of the upper parts, and the vent and under tail-coverts are white.

Adult male. Total length 6·5 inches, wing 3·1, tail 2·6, tarsus 0·75.

Adult female. Total length 6·2 inches, wing 3·05, tail 2·5, tarsus 0·7.

Immature examples, as large as their parents, differ from the adult in having the top of the head brown, darker than the back, and only a few of the black feathers of the cap appearing here and there; the white patch on the cheeks is not so extensive or well defined, merging gradually into the brownish buff of the sides of the neck.

69. Sarcops calvus (Linn.); Grant, Ibis, 1894, p. 517; 1895, p. 258.

One male example of the Bald-headed Grackle was got at Lepanto. It has the mantle, like the rest of the upper parts, pure silvery grey, and is another proof that birds found west of longitude 122° belong to the grey-backed form.

70. Calornis panayensis (Scop.); Grant, Ibis, 1895, p. 260.

A pair of the Panay Glossy Starling were collected in the highlands of Lepanto.

71. Munia cabanisi, Sharpe, Cat. B. Brit. Mus. xiii. p. 353 (1890).

This is the first example of this little Weaver-bird that Mr. Whitehead has obtained, though he has now been in the island of Luzon for nearly two years. It is also found, according to Messrs. Bourns and Worcester, in Panay.

72. Chlorura brunneiventris, Grant, Ibis, 1894, p. 518.

An additional female of this beautiful little green Finch was obtained in Lepanto in the month of January.

73. Pitta kochi, Brüggemann; Sclater, Cat. B. Brit. Mus. xiv. p. 433 (1888).

The finding of a new species of bird must be at all times immensely pleasing to the collector, making up to him in some measure for the many hardships he has to endure, but when he suddenly comes on some long-lost type of a magnificent bird like Koch's Pitta, it must, in my opinion, be even more satisfactory and important than the discovery of any novelty. Mr. Whitehead, during his present expedition, in addition to the new birds he discovered, has made two great ornithological finds, the first being the rediscovery of this almost unknown species, known only from the adult type in the Darmstadt Museum and from an immature bird in the Paris Museum, the second being of course Marche's Fruit-Pigeon, mentioned below. This splendid Ant-Thrush is represented in the present collection by a small series, including adults and young of both sexes, and showing all the various intermediate stages of plumage. The type specimen, described by Dr. Brüggemann [Abh. nat. Ver. Bremen, v. p. 65, pl. iii. fig. 6 (a wretched woodcut showing the head only)], was obtained by a collector named Othberg, no particulars whatever being given regarding its capture. The type specimen was, however, on the whole well figured by Gould ('Birds of Asia,' v. pl. 71, 1880), though the general colour above should be dark olive, not dull olive-brown. In Elliot's recently published 2nd edition of the 'Monograph of the Pittidæ,' pl. xxvi. (1894), we find an indifferent copy of the original plate in Gould; the upper parts are here coloured brown, and absolutely unlike the birds before us; the forehead and crown, too, are described as dark olive-brown, whereas they are really brownish black. Further, the artist has also taken upon himself the responsibility of depicting the upper figure as having the middle of the lower breast and belly light brown, but there is no trace of this either in Gould's original figure or in any of the birds before us. I must also draw attention to a certain want of accuracy in the letterpress to this plate, the bird being called throughout *Pitta kocki*, though it was, of course, named in honour of Dr. G. v.

Koch, the Director of the Darmstadt Museum, and the collector's name, through whom the original type specimen was obtained, should be written Herr v. Othberg, not Oothberg.

The type was borrowed by Lord Tweeddale and figured by Mr. J. Smit in the P. Z. S. 1878, pl. xxiv. This figure is also very inaccurate, for though the dark olive of the upper parts is represented (though much too bright), the wing is here shown as almost uniform olive-green, with two slate-blue cross-bands formed by the tips of the secondary and greater wing-coverts; this is quite inaccurate; in both Gould's and Elliot's figures these parts of the bird are correctly figured. On comparing these three plates, it is curious to see how remarkably they differ one from another considering that they are all supposed to represent the same individual.

As M. Oustalet's description of the immature bird in the Paris Museum does not seem to agree with any of the stages of plumage shown in the series before me, the following description may be useful:—

Immature female. Top of the head rather dark brown, shading gradually into a more rufous tint on the nape; all the feathers have rather darker margins, giving these parts a slightly scaled appearance; a few of the dull red feathers of the adult are beginning to make their appearance; the dark olive on the rest of the upper parts has a somewhat browner shade, though here and there some of the greener feathers of the adult plumage may be seen; the greyish blue of the outer wing-coverts and outer webs of the secondaries is replaced by dull olive, and the slate-blue of the upper tail-coverts and tail is not so bright; the ear-coverts are brown, with buff centres; the moustache stripes dirty white, devoid of that reddish shade characteristic of the adult plumage; the chin and throat-feathers with white centres and black margins and bases, those on the fore-neck being conspicuously white, washed with reddish; the chest-feathers are whitish buff, edged with brownish buff, with here and there a few slate-blue feathers; rest of the underparts dirty whitish buff, most of the feathers, especially those on the sides and flanks, margined with brownish buff; a few pale scarlet feathers indicate the colours of the adult, but are much less brilliant.

In more advanced examples the upper parts entirely resemble those of the fully adult bird, but the slate-blue on the wings is almost wanting; the fore-neck and chest are still intermixed with white-and-buff-centred feathers, and on the rest of the underparts the scarlet feathers of the adult and the whitish buff of the juvenile plumage are represented in about equal parts.

It is difficult to imagine anything more glorious than the colours of the fully adult male, the brilliant scarlet of the lower breast and belly contrasting vividly with the shining slate-blue chest.

The *adult female* differs from the male only in having the colours of the underparts rather less brilliant.

74. Macropteryx comata (Temm.); Grant, Ibis, 1894, p. 409.

A female example of the Tufted Tree-Swift was obtained in the month of November.

75. Collocalia whiteheadi, sp. n.

Mr. Whitehead has forwarded four examples of this new species, which I at first sight referred to Low's Swiftlet (*C. lowi*), though with considerable hesitation, for it appeared to me that among the birds referred to this species by Mr. Hartert [Cat. B. Brit. Mus. xvi. p. 498 (1892)] there were examples of at least two, if not three species, judging from the length of the wing, shape of the tail, and feathering of the tarsi. In the four birds from the Lepanto district the wing-measurements vary from 5·2 to 5·5 inches; all have the tail *distinctly forked,* the middle pair of feathers being a quarter of an inch shorter than the outer pair; also the tarsi *entirely naked.* A female from Palawan, recently obtained from Mr. Everett (wing 5·15 inches), is perfectly similar in all respects to the Lepanto birds, having the freshly-moulted tail very distinctly forked and the tarsi devoid of any trace of plumes. This example was received since the publication of Mr. Hartert's work; but with regard to specimens *h* and *i*, shot by Mr. Moseley at Porto Princesa, Palawan, *h* is an adult male of *C. whiteheadi*, while *i* is a female adult of *C. lowi.*

In the type of *C. lowi*, obtained by Ussher in Labuan (wing 5·3 inches), the tail is *practically square*, the middle and outer pair of feathers being subequal, and the tarsi *distinctly feathered.*

Mr. Hartert has also included with his *C. lowi* several examples of typical *C. fuciphaga*, the characteristics of this species being its smaller size, *strongly forked tail*, and *feathered tarsi.* These examples are specimens *d*, *e*, and *f* of his Catalogue.

At my request Mr. Hartert has kindly examined all the material in the National Collection, and agrees with me as to the correctness of the above conclusions; he has also sent me a copy of his paper, "List of a Second Collection of Birds from the Natuna Islands," published in the 'Novitates Zoologicæ,' ii. pp. 446 to 478 (August 1895). On p. 472 he makes some remarks about *C. fuciphaga* and *C. lowi*, but does not throw much light on the subject, for he says, "I believe I made a mistake in enumerating some of the Palawan birds in the British Museum as *C. lowi.* They were quite young, with wings not fully grown, and seem rather to be *C. fuciphaga.*" I cannot agree with this statement, for the specimens from Palawan are both adult, and, as will be seen above, referable to *C. whiteheadi* and *C. lowi*, not to *C. fuciphaga*; clearly some of the Bornean birds referred to *C. lowi* belong to *C. fuciphaga*, but none of the specimens from Palawan.

C. whiteheadi may thus be briefly characterized:—

Adult male and female. Like *C. lowi* in coloration, but rather larger, with the tail distinctly forked and the tarsi entirely devoid of plumes.

		Total length.	Wing.	Tail.	Tarsus.
		in.	in.	in.	in.
Types of the species.	*Adult male* . .	5·6	5·5	2·25	0·5
	Adult female	5·5	5·4	2·25	0·5

The key should stand:—

a. Without white on the abdomen.
  a'. Without whitish or greyish band across the rump.
    a''. Tail square, middle and outer pairs of feathers subequal. Larger, wing 5 inches to 5·3. Tarsi feathered .... *C. lowi.*
    b''. Tail distinctly forked.
      a^{3}. Tarsi entirely devoid of feathers.
        a^{4}. Larger. Wing 5·15 inches to 5·5. Upper parts sooty .... *C. whiteheadi.*
        b^{4}. Smaller. Wing about 4·5 inches. Upper parts brownish....................... *C. unicolor.*
      b^{3}. Tarsi feathered. Upper parts dark and glossy *C. fuciphaga.*

76. Collocalia fuciphaga (Thunb.); Hartert, Cat. B. Brit. Mus. xvi. p. 498 (1892).

I have one male and three females of the Edible-nest Swiftlet from the highlands of Lepanto, obtained in the month of January. The tarsi in these examples are very distinctly feathered and the upper parts are very dark and glossed with green; in many respects these birds appear to me to differ considerably from examples obtained in the Nilghiris, formerly distinguished as *C. unicolor*, but now united with *C. fuciphaga*. Mr. Hartert mentions the feathering of the tarsi as a distinctive character of the long-winged Himalayan subspecies *C. brevirostris*, but it is equally developed in specimens from Borneo, New Guinea, &c., which he includes in his typical *C. fuciphaga*; and I may remark that examples from these last localities differ from the Nilghiri birds, and resemble Philippine examples in having the upper parts dark and glossy. I have now examined the whole of the material in the Museum with great care, and, in my opinion, the Nilghiri bird may well be distinguished under the name of *C. unicolor*, Jerdon, the characteristics being the much browner upper parts and the naked tarsus, which is, without exception, devoid of feathers. As regards the subspecies *C. brevirostris*, McClelland, from the Assam hills, &c., I cannot agree with Mr. Hartert in considering this form worthy of subspecific rank, for its larger size alone distinguishes it from the typical *C. fuciphaga* of

Java. The latter has the tarsi invariably feathered, and this peculiarity is to be seen in birds from Borneo, the Philippines, New Guinea, &c.; but, so far as our specimens can be trusted, there is no trace of feathering on the tarsi of birds from Celebes, and the feathers do not appear to have been worn off (though of course this may have been the case). In size these Celebean birds are rather small, the wing varying from 4·3 inches to 4·4; the upper parts are smoky brownish black, with a slight olive gloss, and in this respect perfectly similar to those obtained in the Assam hills, the Philippines, New Guinea, Borneo, and Java, all of which I consider typical *C. fuciphaga*, a form which, so far as I know, is never found in Southern India.

77. Collocalia linchi, Horsf. & Moore; Hartert, Cat. B. Brit. Mus. xvi. p. 508 (1892).

A pair of Linch's White-breasted Swiftlet was shot in the highlands of Lepanto in the month of February; this is the first time that this species has been recorded from the Philippine Islands with certainty. Tweeddale mentions a specimen in the Darmstadt Museum collected by Herr v. Othberg, and said to have been obtained in Luzon, which he records under the name of *C. fuciphaga* (Thunb.), informing us at the same time that "it is not separable from the Javan species, *C. linchi*, H. & M.—that is, the true *C. fuciphaga* of Thunberg."

78. Caprimulgus manillensis, G. R. Gray; Grant, Ibis, 1894, p. 518.

An adult male of the Manilla Nightjar obtained in the highlands of Lepanto bears out my remarks in a former number of 'The Ibis,' quoted above, having only the terminal portion of the inner webs of the outermost pair of tail-feathers white.

79. Caprimulgus griseatus, G. R. Gray; Grant, Ibis, 1895, p. 261.

Several more examples of this rare Nightjar have now been obtained; they are perfectly similar to the type in markings and plumage, the general tone being grey in all.

80. Lyncornis macrotis, Vig.; Grant, Ibis, 1894, p. 519.

A pair of the Philippine Eared Nightjar has again been collected by Mr. Whitehead, obtained on the same date, but no further specimens of *L. mindanensis*, Tweedd., are included. Mr. Whitehead seems to be of opinion that the latter bird is really distinct from *L. macrotis*, though it will be remembered that both these supposed species were found to occur in the Benguet district.

81. Batrachostomus microrhynchus, Grant, Bull. B.O.C. xxviii. p. xli (1895).

Mr. Whitehead has sent two specimens of a small Frogmouth belonging to this genus in the present collection, which I have been unable to identify with anything already described. The most nearly allied forms are undoubtedly *B. septimus*, Tweeddale, from Zamboanga, and *B. menagei*, Bourns and Worcester, from North Panay; but the size of the bill alone is sufficient to distinguish these birds at once from our new bird from Luzon, which has the culmen remarkably small.

	Culmen.				
	Length.	Width at gape.	Wing.	Tail.	Tarsus.
	in.	in.	in.	in.	in.
B. microrhynchus, ♂ ♀ ..	0·75	1·15	5·52	3·9–4·0	0·65–0·7
B. septimus, ♂ ♀	1·15	1·65	6·1–6·2	4·3–4·5	0·65–0·75
B. menagei, ♂	1·05	not given	5·46	4·14	0·61

Adult male is in very dark plumage; the crown being brownish black marked and mottled with buff, the nuchal band of the same colour, and the mantle and back are very similar to the crown, but with more buff finely intermixed. The scapulars are mostly clear buff, with mottled black barrings on the inner webs and a black subterminal spot. Wing-coverts black mottled with rufous, most of the median and greater with a whitish spot at the extremity of the outer web; sides of head, chin, and throat finely mottled and barred with black and buff, darker on the hinder cheek. Bands above and below the chest whitish edged with black. Chest whitish buff finely mottled with black; belly rather paler and more coarsely marked.

Adult female. General colour uniform chestnut, with scarcely a trace of any black markings except on the secondary quills; in other respects very similar in plumage to the female of *B. septimus.* The outer webs of the scapulars rufous buff, each with a small subterminal black spot; greater and median wing-coverts with a terminal white spot on the outer web, edged internally with black; nuchal and pectoral bands white, edged with black.

81*a*. ALCYONE CYANIPECTUS (La Fresnaye) and A. PHILIPPINENSIS (Gould).

I have read Messrs. Bourns and Worcester's letter in 'The Ibis' (1895, p. 404), in which they express the opinion that I am in error in maintaining that there are two such species as those named above. They write that "without doubting in the least Mr. Whitehead's ability to ascertain the sexes of birds correctly, we are still perfectly certain that Mr. Ogilvie Grant's conclusion is incorrect." This is a little difficult to understand, for if Mr. Whitehead's specimens *are* properly sexed, then without doubt it follows that my conclusions must be right. In case any mistake should have been made I wrote to Mr. Whitehead and have had the following reply:—"I think there is some mistake as to the little blue Kingfishers, *A. cyanipectus* and *A. philippinensis.* If I remember aright there is a young female with a dull-coloured bill like the female, in which the band does not cross the chest; the males have a ring of blue across the chest. I was very ill, when the case went off, with bad dysentery, and the temperature up in the nineties, so mistakes are not to be wondered at; I quite support Major Wardlaw Ramsay in thinking that they are ♂ and ♀ of one species." Mr Whitehead also sent me a copy of his journal, with which I checked over the sexes of the specimens, each being separately numbered, and I find that in each case they are correctly marked according to the entry in the journal. I may here remark that the specimen lacking the blue pectoral band and marked ♂ is *not* an immature bird, as suggested by Messrs. Bourns and Worcester, but perfectly adult. A mistake in sexing may have been made—such accidents must occasionally happen to every collector, however careful he may be. If my conclusions are wrong—and I am quite ready to admit that they may be, especially after reading the above-mentioned letter in 'The Ibis'—then the sexes of two out of the five Kingfishers sent have been wrongly determined by Mr. Whitehead, such a mistake on his part being hitherto unknown. I have already pointed out the perfectly appreciable difference in the bill in these two supposed species, but should it be proved that they are merely sexes of the same bird, it follows that this difference is also merely sexual. There were no more examples of these birds in the Lepanto collection, but Mr. Whitehead has promised to send more shortly, and to take particular care to ascertain the sex of each correctly.

82. HALCYON GULARIS (Kuhl); Grant, Ibis, 1894, pp. 409, 520.

The White-throated Kingfisher is apparently common enough.

83. PENELOPIDES MANILLÆ, Bodd.; Grant, Ibis, 1894, pp. 409, 520; 1895, p. 261.

A fine adult male of the Manilla Hornbill was collected in November.

84. IYNGIPICUS VALIDIROSTRIS, Blyth; Grant, Ibis, 1895, pp. 114, 262.

An adult female of the Luzon Pigmy Woodpecker is perfectly similar to those from the Benguet and Albay districts.

85. CHRYSOCOLAPTES HÆMATRIBON (Wagl.); Grant, Ibis, 1894, p. 520.

One male of the Crimson-backed Woodpecker was procured.

86. THRIPONAX JAVENSIS (Horsf.); Grant, Ibis, 1894, pp. 409, 520.

A female of Horsfield's Great Black Woodpecker has the concealed white patch on the lower back but little developed.

87. **Xantholæma hæmatocephala** (P. L. S. Müller); Grant, Ibis, 1895, p. 262.

Lepanto examples of the Crimson-gorgeted Barbet are perfectly similar to the pair already sent by Mr. Whitehead from the Albay district, and likewise belong to the rather larger northern form.

88. **Cacomantis merulinus** (Scop.); Grant, Ibis, 1894, p. 520; 1895, p. 262.

An immature female example of the Rufous-bellied Plaintive Cuckoo was shot in November.

89. **Centropus viridis** (Scop.); Grant, Ibis, 1894, p. 410; 1895, p. 262.

The Green Philippine Coucal is also represented in the present collection.

90. **Lepidogrammus cumingi** (Fraser); Grant, Ibis, 1894, p. 520; 1895, p. 262.

Fine adult examples of the Curl-crested Cuckoo were again obtained.

91. **Prioniturus luconensis**, Steere; Grant, Ibis, 1894, p. 410; 1895, p. 115.

We have several examples of Steere's Luzon Racquet-tailed Parrot, but this beautiful yellow-green species is quite eclipsed by Mr. Whitehead's following discovery:—

92. **Prioniturus montanus** (ex MS. J. Whitehead); Grant, Bull. B. O. C. iv. p. xli (1895).

The discovery of a third species of Racquet-tailed Parrot in Luzon is extremely interesting. Up to the present time we knew only the yellow-green *P. luconensis*, Steere, and the green *P. discurus* (Vieill.), distinguished by having the crown of the head bright blue. The present species is larger than either of the above birds and belongs to the handsome group characterized by having a scarlet patch on the hinder part of the crown, and including the species *P. platurus* and *P. flavicans* from Celebes, the Togian Is., &c., and *P. verticalis* recently described by Dr. Sharpe from Sibutu. To this last species our bird is most nearly allied, but both the male and female are easily distinguishable by the following characters :—

Adult male. Back of the head and nape dark grass-green, only slightly brighter than the back and rest of the upper parts, the blue tips to the feathers of the forehead and crown darker, commencing at the base of the bill and extending over the lores, sides of the head, and cheeks; underparts dull grass-green, with scarcely a trace of yellow, so characteristic of the Sibutu bird.

Adult female. Differs from the female of *P. verticalis* in having the head dull grass-green, the forehead, lores, sides of the crown, and feathers round the eyes being washed with blue. The underparts are like those of the male and never yellow-green as in the Sibutu female. "Eyes stone-grey, bill and feet whitish lead-grey" [*J. W.*].

Adult ♂. Total length 12·4 inches, wing 6·3, tail 5·5, tarsus 0·65.

Adult ♀. Total length 12·2 inches, wing 6·4, tail 5·2, tarsus 0·65.

This fine species, which may be called the Luzon Crimson-spotted Racquet-tailed Parrot, was met with in the high mountains of Lepanto.

93. Bolbopsittacus lunulatus (Scop.); Grant, Ibis, 1894, p. 410.

Two adult females of the Luzon Collared Parrakeet were collected in Lepanto.

94. Osmotreron axillaris (G. R. Gray MS. *fide* Bonap.); Grant, Ibis, 1894, pp. 410, 521; 1895, p. 264.

The Philippine Green Pigeon is apparently fairly common in this district.

95. Phabotreron leucotis (Temm.); Grant, Ibis, 1894, pp. 410, 521; 1895, p. 264.

An example of this Pigeon was obtained in the highlands of Lepanto, but in comparison with the magnificent Fruit-Pigeon that follows is of little importance.

96. Ptilopus marchei, Oustalet; Salvad. Cat. B. Brit. Mus. xxi. p. 75 (1893).

The finding of Marche's Fruit-Pigeon, the largest as well as one of the handsomest birds of this group, is only equalled in importance and interest by Mr. Whitehead's rediscovery of Koch's Pitta. The only previously known example of this Pigeon was the type in the Paris Museum obtained in Luzon by M. Marche more than fifteen years ago; this example was believed to be a female, the sex having been doubtfully determined. Under these circumstances it may not be considered superfluous to give a full description of the male, female, and immature of this very rare bird.

Adult male. Entire top of the head dull crimson-red, the same colour being continued down the sides of the cheeks, on either side of the throat; feathers surrounding the eye light red; hind cheek and ear-coverts dusky black; back and sides of the neck and upper part of the breast pearl-grey, forming a collar which completely separates the dull crimson crown from the dusky black mantle and back. Wings like the back, but with green reflections; lower back, rump, and upper tail-coverts bronze-brown with green reflections; primary-quills black, finely edged with pale yellow; the two outer secondaries are similarly margined, the remainder edged with crimson along the middle of the outer web, the crimson barbs being loose and free and forming a large patch on the wing. Tail bronze-brown, broadly edged with brownish grey, beneath dark grey tipped with whitish; chin and middle of throat brownish buff. In the centre of the grey breast there is a large patch of bright orange-vermilion washed with lake, and shading into deep red-lake below; this is followed by a patch of creamy white; the rest of the underparts are dull pearly grey, most of the feathers being finely edged with creamy yellow, and the under tail-coverts are buff, with brownish-grey centres. "Eye: inner ring yellow, outer lake-red; bill at base brick-red, tipped with yellow; feet deep coral-red" [*J. W.*]. Total length 16 inches, wing 7·1, tail 5·1, tarsus 1·25.

Adult female. Similar to the male, but the crown is of a less crimson tinge; the lower part of the back, rump, and tail are bronze-green, distinctly greener than in the male, and the upper part of the breast-patch is orange-red without the crimson wash. Total length 14·7 inches, wing 6·8, tail 4·5, tarsus 1·15.

A young male. The whole of the upper parts is brownish bronze shot with green; the dull crimson of the top of the head and the free crimson webs of the secondaries are just beginning to make their appearance; the whole of the feathers of the chest and upper breast are grey, widely tipped with bronze-green, the only patches of pure grey feathers being visible on each side of the neck. The orange-red breast-patch is represented by a deep orange feather in the middle of the chest and some dark carmine feathers. Otherwise the rest of the plumage is much like that of the adult.

97. COLUMBA GRISEIGULARIS (Wald. & Layard); Salvadori, Cat. B. Brit. Mus. xxi. p. 313 (1893).

Several examples of the large Grey-throated Wood-Pigeon are before me. A younger female bird (the sexes are perfectly similar in plumage) has the reflections on the upper back and rump mostly green instead of violet, this difference being even more marked in a still younger example, in which the feathers of the crown are almost entirely deep grey narrowly edged with rufous bronze, and many of the chest- and breast-feathers are margined with rufous.

98. MACROPYGIA TENUIROSTRIS, Gray; Grant, Ibis, 1894, p. 521, 1895, p. 265.

Both male and female examples of the Slender-billed Cuckoo-Dove are represented in this collection, and we are thus enabled to settle a rather interesting point with regard to the differences of plumage in the two sexes. Major Wardlaw Ramsay was of opinion that both sexes were alike, but Count Salvadori, in describing the adult female (Cat. Birds Brit. Mus. xxi. p. 347, 1893), remarks :—" Contrary to Major Wardlaw Ramsay's opinion, I think that the specimens of this sex differ from the male, and resemble the young birds, from which they differ in being more uniform on the back and wings, which do not show the broad rufous-cinnamon edges on the upper wing-coverts." Count Salvadori is no doubt perfectly correct, but there are one or two other points to which I should like to draw attention.

In the fully adult female the pale rufous barring on the nape and mantle is very distinctly narrower than in young birds; the rufous edgings to the feathers of the wing-coverts, &c., are narrow but well-defined; *the feathers of the fore-neck are pale rufous, widely margined with black,* and there are no subterminal black bars across the rufous ends of the chest-feathers, the grey bases being followed only by the wide rufous margins.

In a very old female (from Basilan, *Everett*) the barring on the hind-neck and mantle is reduced to mere finely-freckled lines of buff, which are almost absent on the lower parts of the mantle, the feathers being practically uniform deep brown; the rufous edgings on the wing-coverts, &c., are mostly obsolete, except on the lesser coverts; *the fore-neck is mostly dark sooty brown, with indistinctly marked pale rufous shaft-stripes.* This is the specimen of which Major Wardlaw-Ramsay writes (Ibis, 1890, p. 222):—"One specimen marked female (Basilan, *Everett*) is evidently young; it has the throat and breast black-brown, with a central streak or spot of rufous on each feather." I have now no hesitation in saying that this is not a young bird, but, on the contrary, the most adult female in the series.

In young birds the barring on the nape and mantle is wider and more extended, the rufous edgings to the wing-coverts, &c., are vermiculated and less clearly defined, *the black edgings to the feathers of the fore-neck are entirely absent,* and there is a subterminal blackish band across the middle of the rufous ends to the breast-feathers.

I may also call attention to the fact that specimens from Manilla, Negros, and Palawan are considerably larger than the birds from Zamboanga, Basilan, and Sulu. The wing of adult males and females from Luzon varies from 7·3 to 7·6 inches, males from Negros measure 7·3 to 7·4, and a male adult from Palawan has the wing 7·3; males and females from

Zamboanga 6·3 to 6·5; and females from Basilan 6·4 to 6·55. It is an almost invariable rule that specimens from more northern localities are larger than those of the same species obtained further south, and the Slender-billed Cuckoo-Pigeon is no exception.

99. TURTUR DUSSUMIERI (Temm.); Grant, Ibis, 1895, pp. 117, 265.

Males of Dussumier's Turtle-Dove have been sent.

100. TURTUR HUMILIS (Temm.); Grant, Ibis, 1894, p. 411.

The Eastern Ruddy-Dove is apparently rather a rare bird in Luzon, for previous to the two males sent in the present collection a single example only has been sent, and very few seen.

101. GEOPELIA STRIATA (Linn.); Grant, Ibis, 1894, p. 411.

Although the Barred Ground-Dove is reported to be common in the neighbourhood of Mt. Arajat, where Mr. Whitehead's first collection was made, the present pair are the only other examples that have been sent so far.

102. CHALCOPHAPS INDICA (Linn.); Grant, Ibis, 1895, p. 265.

The Indian Bronze-winged Dove, though widely distributed, has also been sent only for the second time.

103. GALLUS GALLUS (Linn.); Grant, Ibis, 1894, p. 521.

A pair of Jungle-Fowls were sent.

104. EXCALFACTORIA LINEATA (Scop.); Grant, Ibis, 1895. p. 265.

Males of the beautiful little Painted Quail from Lepanto are of the usual dark-backed insular form.

105. TURNIX FASCIATA (Temm.); Grant, Ibis, 1895, p. 265.

A nestling which probably belongs to this species was obtained, but without either parent; of course it is possible that it may be the young of *T. ocellata*.

106. HYPOTÆNIDIA PHILIPPINENSIS (Linn.); Sharpe, Cat. B. Brit. Mus. xxiii. p. 39 (1894).

We have a male of the Philippine Banded Rail.

107. **Limnobænus fuscus** (Linn.); Sharpe, Cat. B. Brit. Mus. xxiii. p. 146 (1894).

Males of the Ruddy Crake, which are the first Mr. Whitehead has sent home.

108. **Ægialitis dubius** (Scop.); Grant, Ibis, 1895, p. 266.

Mr. Whitehead has obtained examples of a Little Ringed Plover about which he makes the following remarks:—"I send you a small resident Ringed Plover; you will notice first that the sexes are alike in plumage, secondly that they are in full breeding-dress when birds of the northern species are in their winter (or dull) plumage, and that they are not *Æ. peronii*." I have examined these specimens carefully, as well as some obtained by Mr. Everett from other islands of the group, and I find that they are identical with examples from India and other localities. It is usual to find that when a certain number of birds of a species are resident—as in the present instance—they assume their summer plumage sooner and more fully than migratory birds of the same species.

109. **Totanus glareola** (Linn.); Seebohm, Monog. of the Charadriidæ, p. 365 (1887).

A female of the Wood-Sandpiper on migration.

110. **Tachybaptes philippinensis** (Bonnat.); Walden, Trans. Zool. Soc. ix. p. 245 (1875).

The Philippine Dabchick in winter plumage completes the present list.

XXXVII.—*On some Birds from the Island of Negros, Philippines.* (Second Contribution.) By Wm. Eagle Clarke, F.L.S.

My friend Mr. John Maclauchlan, Director of the Dundee Museum, has submitted to me for identification another collection of birds from the east coast of the Island of Negros, made by Mr. W. A. Keay, between the middle of November 1894 and the end of April 1895, and presented by that gentleman to the Museum.

This little series, like Mr. Keay's previous collection, contains some specimens of considerable interest. Among the more important I may mention here that rare Raptor, *Falco atriceps* (a subspecies of *Falco peregrinator*), which is an addition to the avifauna of the Philippines. Several other birds among those now to be recorded are either new to or have only rarely been obtained in Negros. On the other hand, a number of the specimens in this second collection belong to species already treated of in my former paper (Ibis, 1894, pp. 531–535), and will therefore have no place in this contribution.

Mr. Keay furnishes a short note on that remarkably rare Swift, *Chætura celebensis*, from which it would appear that this bird may not be uncommon, though most difficult to obtain, in the island.

I have also included some notes on several of the Philippine Woodpeckers of the genus *Thriponax*, extracted from letters written to me by the late Mr. Edward Hargitt shortly before his lamented decease. These will, no doubt, be appreciated by those who are interested in the varied forms of this difficult genus.

I shall have to make several references to the following papers :—

Ramsay, Major R. G. Wardlaw.—'A Revised List of the Birds known to occur in the Philippine Islands, showing their Geographical Distribution.' Appendix to the 'Ornithological Works of the Marquis of Tweeddale' [Tweeddale Memoir], 1881.

Steere, Professor J. B.—'A List of the Birds aud Mammals collected by the Steere Expedition to the Philippines, with Localities, and with Brief Preliminary Descriptions of supposed new Species.' 1890.

Bourns and Worcester.—'Preliminary Notes on the Birds and Mammals collected by the Menage Scientific Expedition to the Philippine Islands.' By Frank S. Bourns and Dean C. Worcester. Minnesota Acad. Nat. Sci. (Occasional Papers) vol. i. no. 1. 1894.

I now proceed to catalogue the principal specimens of the present collection. These are:—

Lanius nasutus, Scopoli.

Lanius nigriceps, Frankl.; Gadow, Cat. Birds Brit. Mus. viii. p. 286.

This specimen has the mantle clear pale grey, and is, I presume, a young bird, though, according to Dr. Gadow, the immature birds have the mantle "more or less strongly washed with grey" only. As *Lanius nasutus* it has been recorded for Negros by Prof. Steere (*op. cit.* p. 13).

Artamus leucorhynchus (Linn.).

Two specimens.

In the first of these specimens the primaries are uniform dark slate-colour, and *not* black. In the second specimen the quills are similarly coloured, but their webs, and those of some of the secondaries, are striped, blotched, or tipped with black. This probably indicates that the colour of the larger wing-feathers is dependent upon age, and that these are not fully adult specimens.

This species appears for Negros in the Lists of Major Wardlaw Ramsay and Prof. Steere.

Chætura celebensis, Sclater; Eagle Clarke, Ibis, 1894, p. 533.

This species was the prize of Mr. Keay's former collection, and before he returned to Negros in the autumn of 1894 he was strongly urged to use his best endeavours to secure further specimens of this very great rarity. This, unfortunately, he was not able to accomplish, though he saw Swifts, which he believes to have been of this species, *in considerable numbers* on different occasions, but they flew so high that they were out of the reach of shot.

Merops philippinus, Linn.

Male and female.

Thriponax hargitti, Sharpe; Eagle Clarke, Ibis, 1894, p. 534.

On the appearance of my former paper on the birds of

Negros, the late Mr. Hargitt wrote to me on the subject of the identity of the specimen of *T. hargitti* therein recorded. In reply I sent him the specimen for examination, and he wrote me as follows :—"I can quite understand you and Mr. Hartert* taking the bird to be *T. hargitti*, as it is possible you thought the few white feathers which still exist on either side of the lower part of the rump indicated that the bird had had a white rump. This I do not regard as certain. Upon turning down the white flank-feathers you will find that almost the entire rump is bare of feathers; these might have been white, but they might also have been black; there is nothing whatever to show that they were not black, and many examples of *T. javensis* have concealed white feathers both on the lower back and on the rump, quite as pronounced as in your specimen. What these concealed feathers mean I am not quite sure of, as they occur in some specimens of *T. javensis* and not in others from the same locality, regardless of sex and age. I am unable to pronounce upon your specimen with certainty. I have only seen one specimen from Negros, and this I regard as *T. javensis*, and it is possible your bird may be the same. Now, admitting that I am right in my identification of the British Museum specimen, and that Steere's bird is really *T. javensis*, and admitting also that your bird has had a white rump, then Steere's theory is not satisfactory, and there would be no doubt that two species inhabited the same island. But then another difficulty arises. What would the white-rumped bird be? It would be either *T. hargitti* or *T. philippinensis* of Steere. In my Catalogue of the Picidæ in the British Museum I recorded two specimens of *T. hargitti* said to have come from the Philippines. They were labelled 'Manilla,' but their exact locality was a matter of doubt, though it appeared tolerably certain that the species did occur in other islands than Palawan. Mr. Steere, in his last expedition to the Philippines, records a new species from Masbate and Guimaras; this would appear to be distinct from the Palawan species, as in the former there is a large amount of red on the sides of the head, between the red malar stripe and the red crown and occiput, in the male. I have specimens of Steere's new species from Masbate and Panay, and these certainly show a spreading of red on the sides of the head, not, however, to have suggested a specific difference from *T. hargitti*; but as Mr. Steere says the species has this character so very strongly marked, we cannot doubt him, and we must accept his species. Now your bird may have been this *T. philippinensis*, as it might possibly occur in Negros. It appears more like the latter than it does *T. hargitti*. I fear you will have to wait for another specimen from Negros before you can decide."

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* Mr. Hartert had examined the specimen and confirmed my identification.

CENTROPUS JAVANICUS (Dumont).

A young bird.

There is a specimen from Negros in the National Collection (Shelley, Cat. Birds Brit. Mus. xix. p. 356).

NINOX SCUTULATA (Raffles).

NINOX SCUTULATA (Raffles), subsp. LUGUBRIS (Tickell); Blanford, Ibis, 1894, p. 524.

One specimen, probably a female; wing 9·2 inches.

This example agrees with Mindanao specimens of *Ninox lugubris* described by the late Mr. Gurney (Ibis, 1884, p. 170) in having the outer webs of the primaries remarkably rufous, and the paler interspaces on the tail decidedly tinged with rufous. The tail has six exposed blackish bands and one concealed narrower dark band.

Though Prof. Steere (Ibis, 1894, p. 417) says that *N. lugubris* seems to be distributed over the whole Philippine Archipelago, yet it does not appear, so far as I have been able to ascertain, to have hitherto been recorded for Negros.

Mr. Blanford, as indicated above, regards *N. lugubris* as a subspecies only of *N. scutulata*.

FALCO ATRICEPS, Hume.

FALCO PEREGRINATOR, Sund., subspecies ATRICEPS, Hume; Gurney, Ibis, 1882, pp. 291–293, pl. x.

A young bird; wing 11·95 inches.

This Negros specimen is a young bird in an interesting phase of plumage, *i. e.* showing the first, but slight traces of maturity. The upper parts are deep brownish black, the feathers edged with deeper bluish black; the scapulars, rump, and upper tail-coverts with a few lavender feathers barred with black; the cheeks entirely black; the chin and throat creamy white washed with buff and with fine black central streaks; the breast and upper abdomen pale chestnut heavily streaked with black; the flanks pale chestnut heavily barred with black; the lower abdomen, under tail-coverts, and thighs greyish buff heavily barred with black, and showing on the abdomen and thighs a few lavender feathers barred with black. These new lavender abdominal and tibial feathers indicate most unmistakably that this specimen is a young example of *F. atriceps*, Hume, a bird which the late Mr. Gurney regards as a subspecies of *F. peregrinator*, Sundevall.

Mr. J. H. Gurney has examined this bird and compared it with the skin of *F. atriceps* in the Norwich Museum, and he endorses my views regarding the identity of this specimen.

This rare Indian bird is an interesting addition to the avifauna of the Philippines. It has recently been obtained at and recorded for Foochow, China, under the name of *F. melanogenys* ('Ibis,' 1894, p. 223), but the Rev. H. H. Slater, who has examined the specimen, pronounces it to be *F. atriceps*.

This specimen was shot by Mr. Keay in March 1895 while in the act of killing one of his domestic pigeons in front of his house. Mr. Keay tells me that he often sees falcons about, and he is of opinion that they are resident in the mountains inland.

CIRCUS MELANOLEUCUS (Forster).

This is an interesting specimen. It is practically in the plumage of the adult male, but it lacks the characteristic broad white band on the inner margin of the wing, formed by the lesser wing-coverts being almost entirely of that colour. In the place of this it has only the cubital or inner *edge* of the wing white, and a few black-and-white feathers on the adjacent marginal coverts, forming a small chequered patch which is so insignificant as to be concealed by the overlapping scapulars when the wing is closed. The proportion of black is consequently much greater on the wing of this bird than in any example of *C. melanoleucus* I have seen. This specimen differs also from the published descriptions of the male of *C. melanoleucus* I have been able to consult, in having the feathers of the upper tail-coverts centred with ashy grey and margined with white, and in wanting the dusky cross-bars present on these coverts in that species.

Though mature, the specimen under consideration is probably not an aged one. This is indicated by the very slight greyish-white edgings to some of the feathers of the nape and chest, and on the tips of some of the left tertials, the exposed right tertials being entirely black. The measurements are: wing 13·3 inches, tail 8·25, tarsus 2·8, and culmen 1·0.

The presence of *C. melanoleucus* in Negros was suspected by Lord Walden and Mr. E. L. Layard on the evidence they furnished to the 'Ibis' in 1872 (p. 98). Elsewhere in the Philippine Archipelago this species has been recorded for Luzon by the late Mr. Gurney, and also by Major Wardlaw Ramsay ('Ibis,' 1886, p. 154); and by Dr. Guillemard for Sulu (P. Z. S. 1885, p. 254).

Prof. Steere found *C. philippinensis*, which appears to be doubtfully distinct from *C. melanoleucus*, in the islands of Mindanao, Guimaras, and Luzon. Messrs. Bourns and Worcester obtained a single female in Negros, and they remark concerning it that it "most nearly agrees with Dr. Steere's description," and they treat of it under the heading of *C. philippinensis* (*op. cit.* pp. 32 & 44).

This specimen was shot from a small tree by Mr. Keay in the spring of 1895. He also informs me that two pairs of these birds were to be seen almost daily quartering the ground on his estate.

MACROPYGIA TENUIROSTRIS, G. R. Gray.

A young bird; wing 6·7 inches.

The only previous record for this species in Negros with which I am at present acquainted is Lord Walden's (Trans. Zool. Soc. ix. p. 218, 1875), where he notices a male obtained by Dr. A. B. Meyer in this island. This specimen he afterwards, as Marquis of Tweeddale, made the type of a new species, *Macropygia eurycerca* (P. Z. S. 1878, p. 288). Count Salvadori, however, has examined this type specimen, which is now in the National Collection, and considers it to be an adult male of *M. tenuirostris* (Cat. Birds Brit. Mus. xxi. (Columbæ) pp. 346–7, 1893).

Gallus ferrugineus (Gm.).

An adult male.

Though pretty widely distributed in the Archipelago, this bird has only lately been recorded for Negros by Messrs. Bourns and Worcester (*op. cit.* p. 29).

Mr. Keay tells me that this is a very abundant species in Negros, and that numbers are shot for the table.

Sterna bergii, Licht.

An adult in winter plumage.

This is another species that has only recently been added to the fauna of Negros, through the labours of Messrs. Bourns and Worcester (*op. cit.* p. 31).

XXXVIII.—*On the Position of the Feet of Birds during Flight.* By E. W. H. Holdsworth, F.L.S., F.Z.S.

Mr. Sclater's observations (referred to at p. 376 in the last number of 'The Ibis') on the manner in which the Gulls and Egyptian Kites carried their feet, as seen by him during his recent trip to the Nile, are specially interesting to me, as for many years the position of the feet of birds during flight has been a subject to which I have given attention. Individual inquiries into such a subject must necessarily be incomplete; but as, both at home and in Ceylon (1865–1871), I have had many opportunities of making observations, especially on the birds found on the coast and at sea, I will offer a few remarks on the subject in hopes of inducing other observers to contribute towards making good my many shortcomings.

I have been able to arrive at very definite conclusions as regards two very comprehensive groups of birds—web-footed and wading birds. I feel justified in saying, from personal observation, that the members of both these groups carry their feet stretched out behind. I have met with no exception to the rule.

Among web-footed birds I have observed numerous species of *Larus* and *Sterna, Sula, Phaëton, Pelecanus, Phalacrocorax, Plotus, Fregata, Alca, Uria, Fratercula, Podicipes,* and *Colymbus.* I have never been south of the Line, and have therefore little to say about the great family of Petrels, large and small, which are so abundant in southern latitudes. But I have little doubt of their following the rule in the other sea-birds I have mentioned. In our common Stormy Petrel, the tendency of the feet is backwards when these are not actually paddling over the surface, though I cannot say I have distinctly seen them stretched out behind, as is the case with the Gulls and Terns. I need say nothing about the Anatidæ. Everyone knows that Ducks, Geese, and Swans keep their feet turned backwards during flight; and anyone who has seen the anomalous Flamingo on the wing will have no doubt about its following the same rule.

Turning now to the numerous long-legged birds which I have included under the comprehensive title of Waders, I have observed the backward direction of the feet in the following genera:—

Among the Charadriidæ—*Œdicnemus, Cursorius, Charadrius* and *Ægialitis* (many species), *Vanellus, Hæmatopus,* and *Strepsilas.*

Of the Scolopacidæ I have observed *Himantopus, Gallinago, Tringa* and *Totanus* (many species), *Limosa, Numenius.*

Ardeidæ—Several species of Heron and Egret.

Ciconiidæ—*Ciconia, Mycteria, Leptoptilos.*

I have no personal knowledge of the manner in which the Gruidæ and Otididæ carry their feet, but I have little doubt about their conforming to the rule of the Waders. I have never had the good fortune to see a Bustard on the wing, and the only Cranes I have seen at large were stalking about the fields in Northern India. Wolf, however, is a trustworthy witness, and in his beautiful drawing of the Mantchurian Crane he represents it with the feet behind. *Chionis* and the aberrant *Chauna* will probably be found to agree with the Waders.

The Rallidæ are another doubtful family. It is difficult to get a chance of seeing any one of them when fairly on the wing, as on migration and when flushed the legs are generally hanging down. I expect, however, they belong to the backward-carriers, as their large feet would be much in the way if carried in front.

The large group of Passeres is the one in which I believe the forward direction of the feet during flight will be found most characteristic. The habit is plain enough in the larger species, but it is not easy to observe it in the numerous small ones. I must leave them for further observation. I can add nothing definite about the very curious forms found among the Picariæ, or concerning the Striges or Accipitres. Falconers should be able to tell us something about the latter, and, notwithstanding the unexpected discovery that the Kites carry their feet behind, I do not believe that rule applies to the Falcons or some others of the order.

The Columbidæ, I have reason to believe, carry their feet in front, and I once had a distinct view of the same habit in a Ceylon Jungle-fowl, as it unexpectedly flew over my head whilst I was loading my gun; but I understand that the Pheasant and the Capercaillie both rise with their feet in front, and when well on the wing turn them backwards, so this may be the case with the other Gallinæ, and possibly also with the Pigeons.

The question naturally arises as to what determines the position of the feet of birds during flight. It is not, however, one to which a very definite answer, which will suit all cases, can be given; but I will offer some suggestions which may, perhaps, be thought worthy of consideration. In the case of web-footed birds we have a great diversity of forms, some of powerful flight, some which spend most of their time in the water, and others, such as the Gulls, which move with almost equal facility on the water, in the air, and on the land. There is also some variety in the proportionate length of the several parts of the leg and of the toes; but they have the one common character of webbed feet. This appears to me to bear on what I regard as the main object of the backward position of the feet—the lessening of resistance to the air.

If a close view be obtained of a Duck or other web-footed bird when swimming, it will be observed that although the toes partially close when they are brought forward, they are only slightly curved, but are bent back from the metatarsal joint, and that at the backward stroke they are straightened and separated by the action of the extensor muscles, aided by the pressure against the water. The toes of a webbed foot do not in fact appear to contract naturally so much as those of a true perching-bird, and the interdigital web, although elastic, would to some extent interfere with both the free closure and the contraction of the toes. Web-footed birds are mostly of rapid flight, the feathers lying very close, and everything being arranged to lessen resistance. If, however, the partially contracted toes were held in front, the webbed foot could not be so disposed of as not to offer some appreciable resistance to the passage of the bird through the air, and there would be some strain on the flexor muscles of the leg and foot to keep them doubled up close to the body. It may be said that Ducks and many other web-footed birds sometimes sleep whilst standing on one leg, the other being doubled up under the flank-feathers; but in those cases the feathers are lying loosely, there is no resistance to the air to be avoided, and some evidence of the position being one of partial strain is shown by the fact that the first thing the bird generally does after putting down its foot is to stretch the whole limb to its fullest extent. The backward position of the leg, with the tibia, tarsus, and toes extended in a straight line, appears to fulfil the desired conditions of muscular equilibrium and minimum of resistance during sustained flight.

Thus far as regards web-footed birds. The same principle seems equally applicable to the Waders, if, instead of considering the webbed foot, we bear in mind the comparatively large foot and long toes which have to be disposed of, and which certainly would not be in any easy or natural position if the leg were doubled up close to the body during flight. Although Herons and some other birds of this group perch on trees, their feet do not appear to be specially suited for that purpose. They look when alighting as if they were not quite in their element among the branches, and the performance seems to have something of an acrobatic character, involving a good deal of balancing, unless the branch on which they first perch be tolerably large and afford a fairly steady resting-place, without much necessity for bending the toes. In the case of the Rallidæ the large toes would be a still greater impediment if held in front; and although, as I have said, I cannot speak from personal observation, I have hardly a doubt about the feet being carried behind. In the Passeres, or true perchers, the legs and feet are usually of very moderate size, and the contraction of the toes appears a natural habit; they clutch the smallest twigs in many cases, and are at once secure and at home on their perch. I should expect, therefore, that there would be no difficulty about doubling up their feet in front, especially as, with a few exceptions, and under the particular circumstances of migration, their flights are only of very short duration. However, I do not want to speculate as to what may or may not be the case.

It will be observed that the length or shortness of the legs has nothing to do with the position in which they are carried. The short-legged Tern and the long-legged Flamingo, the Stilt and the Snipe, have all exactly the same habit in this respect; and this, I think, will dispose of the supposition that the position of the legs has something to do with the balance of the bird. The manner in which the head is carried has probably more bearing on that question.

In very many cases it is extremely difficult to obtain a clear view of the position of a bird's feet during flight, and my observations are necessarily incomplete; but there must be many field-naturalists to whom the subject is not new, and who would be able to give trustworthy information about many of the birds that I have been obliged to leave for others to deal with.

XXXIX.—*Bulletin of the British Ornithologists' Club.*

No. XXVIII. (June 29th, 1895.)

The twenty-seventh meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 19th of June, 1895.

Chairman: P. L. **Sclater**, F.R.S.

Members present:—E. **Bidwell**, F. E. **Blaauw**, W. E. **De Winton**, W. **Graham**, Major A. P. **Loyd**, E. **Neale**, R. **Nesham**, W. R. **Ogilvie-Grant**, **Frank Penrose**, **Digby Pigott**, C.B., Hon. **Walter Rothschild**, **Howard Saunders** (*Treasurer*), R. **Bowdler Sharpe** (*Editor*), E. **Cavendish Taylor**, Major **Horace Terry**, W. B. **Tegetmeier**.

Visitors: Dr. **Drewitt**, **Herbert Druce**, Heer **Renesse van Duivenbode**, Dr. **Jordan**, **Henry Stevens**.

Mr. W. B. **Tegetmeier** exhibited a very curious variety of the Common Rook, with white tips to nearly every feather of the body. This specimen was one of several similarly marked young birds procured in the same rookery during the last spring.

Mr. E. **Bidwell** exhibited an egg of the Great Auk (*Alca impennis*), from Iceland: from the collection of Baron d'Hamonville, and formerly in the collection of Count Raoul de Beracé.

Mr. W. R. **Ogilvie-Grant** exhibited skins of some new species of birds discovered by Mr. John Whitehead in the mountains of Lepanto in Northern Luzon. They were described by Mr. Grant as follows:—

SCOPS WHITEHEADI, sp. n.

Maximus. Similis *S. everetti*, sed valdè major, et digitis basaliter plumis densè vestitis. Long. tot. maris 10 poll., alæ 7·4, tarsi 1·65. Long. tot. fœm. 11·4, alæ 8, tarsi 1·9.

RHINOMYIAS INSIGNIS, sp. n.

Magnitudine *S. gularis*, sed superciliis et gutture purè albis, necnon pectore summo et corporis lateribus lætè ferrugineis distinguenda. Long. tot. 6·4 poll., alæ 3·5.

LUSCINIOLA SEEBOHMI, sp. n.

L. similis *L. mandellii*, sed primariis tertio, quarto et quinto subæqualibus et longissimis: culmine magis brunnescente: hypochondriis grisescenti-brunneis nec fulvescenti-brunneis. Long. tot. 5·8 poll., alæ 2, tarsi 0·75.

BRACHYPTERYX POLIOGYNA, sp. n.

B. similis *B. erythrogynæ*, Sharpe, sed saturatior: long. tot. 5·5 poll., alæ 2·6, tarsi 1·25. ♀ omnino diversa, genis guttureque toto rufescenti-fulvis, præpectore dilutiore fulvo: long. tot. 5·4, alæ 2·5, tarsi 1·2.

PSEUDOTHARRHALEUS, gen. n.

Genus generi '*Androphilo*' affine, sed rectricibus 12, nec 10, longioribus et acuminatis distinguendum.

Typus sit

PSEUDOTHARRHALEUS CAUDATUS, sp. n.

Umbrinus: gutture albo, hujus et pectoris lateribus griseis: hypochondriis umbrinis. Long. tot. 7·5 poll., alæ 2·45, tarsi 1.

ZOSTEROPS AUREILORIS, sp. n.

Z. similis *Z. luzonicæ*, sed loris lætè aureo-flavis distinguenda. Long. tot. 4·5 poll., alæ 2·05, tarsi 1·5.

PYRRHULA LEUCOGENYS, sp. n.

P. pileo nigro: notæo sordidè olivascenti-brunneis: gastræo olivascenti-brunneo, pallidiore: subcaudalibus fulvis: genis posticis et regione paroticâ albis. Long. tot. 6·5 poll., alæ 3·1, tarsi 0·75.

BATRACHOSTOMUS MICRORHYNCHUS, sp. n.

Similis *B. septimo*, Tweedd., et *B. menagei*, B. & W., et eodem modo marmoratus, sed rostro debili et multo minore facilè distinguendus. Culm. 0·75 poll. (nec 1·05 in *B. menagei*, 1·15 in *B. septimo*), alæ 5·2, tarsi 0·7.

PRIONITURUS MONTANUS, sp. n.

P. similis *P. verticali*, Sharpe, sed pileo postico nuchaque saturatè gramineo-viridibus, vix quam notæum reliquum lætioribus: genis et facie laterali cyaneis. Long. tot. 12·4 poll., alæ 6·3, tarsi 0·65.

Mr. OGILVIE-GRANT made some further remarks on *Oceanodroma cryptoleucura* from the Salvage Islands. (See above, p. 383.)

Dr. BOWDLER SHARPE described three more species represented in Dr. Donaldson Smith's collection from Somaliland:—

SERINUS DONALDSONI, sp. n.

Similis *S. capistrato*, sed subtùs concolor, gutture minimè maculato: hypochondriis nigro striolatis: fronte viridi, pileo concolore, angustè nigro striolato: superciliis latis flavis: notæo viridi, plumis nigro medialiter striatis: uropygio lætè flavo distinguendus. Long. tot. 6·2 poll., culm. 0·55, alæ 3·3, caudæ 2·55, tarsi 0·66.

SERINUS MACULICOLLIS, sp. n.

S. hypochrondriis distinctè nigro striolatis: gulâ albidâ, torque gutturali nigro maculato insignis. Long. tot. 4·3 poll., alæ 2·6.

CRATEROPUS SMITHII, sp. n.

C. similis *C. hartlaubi*, et uropygio albo, sed loris et regione periophthalmicâ albis, plumis gutturalibus et pectoralibus cinereis, nec brunneis, squamulatim albido marginatis. Long. tot. 10·2 poll., alæ 4·15, caudæ 4·5, tarsi 1·3.

The HON. WALTER ROTHSCHILD exhibited an adult male of *Paradisornis rudolphi* from the Owen Stanley Mountains, two adult males of *Amblyornis inornata* with unusually large crests, and two immature males of *Parotia carolæ*. Judging from the similarity of the young males to adult females in

the two allied species, *Parotia sexpennis* and *P. lawesi*, it was evident that the same identity of plumage would be found in the immature males and adult females of *P. carolæ*. The young male birds of the latter species had the back, wing-coverts, and rump olive-brown, the outer half of the primaries and secondaries chestnut-rufous, the inner half of these quills and tail being dark brown. The breast, flanks, and thighs were rufous buff, barred with black. The adult plumage had already been assumed on the head.

Mr. **Sclater** exhibited three beautifully-made skins of *Falco richardsoni* of North America (♂, ♂, ♀) obtained in Lorimer County, Colorado, in December 1891 and February 1892, and transmitted to Mr. Sclater by Mr. W. E. Brooks for examination. There was at present only one specimen (♂ jr.) of this rare Falcon in the British Museum.

Mr. **Sclater** also exhibited a nest and two eggs of the Pale Rock-Martin, *Ptyonoprogne obsoleta* (see Sharpe & Wyatt, Monogr. Hirund. vol. i. pl. xvi.), which he had taken on the 25th February last from a ledge of rock in the smaller rock-temple of Abu Simbel, Upper Egypt. The eggs appeared to be quite fresh, but one of them had been unfortunately broken on the journey home. The nest consisted almost entirely of feathers mixed with a few dry hay-straws; it was very loosely made and placed on a slight basis of dry mud.

Mr. F. E. **Blaauw** gave an account of the nesting of a pair of Rufous Tinamous (*Rhynchotus rufescens*) in his garden at 'sGraveland. Five eggs were laid in a slight nest made by the male, and four young ones hatched. Incubation was undertaken entirely by the cock bird, which only left the nest to feed. The cock also took entire charge of the young brood, but it had not been found necessary to remove the hen from his company. The fact of the male's incubation had already been recorded by Mr. Bartlett (see P. Z. S. 1868, p. 114), but it was interesting to have it confirmed. In 'Argentine Ornithology' (vol. ii. p. 110) the question had been left unsettled by Messrs. Sclater and Hudson.

XL.—*Notices of recent Ornithological Publications.*

[Continued from p. 403.]

102. *Baker on the Birds of North Cachar.*

[The Birds of North Cachar. A Catalogue of the Passeriformes, Coraciiformes, and the Order Psittaci of the Subclass Ciconiiformes. By E. C. Stuart Baker. Journ. Bombay Nat. Hist. Soc. viii. p. 102; ix. pp. 1, 111.]

This catalogue contains an account of the numerous field-notes and observations made by Mr. Stuart Baker on the birds of North Cachar, where, as we all know, he has been a diligent collector and observer for many years. The list is arranged on Mr. Oates's system, upon which, however, Mr. Baker makes some critical remarks. North Cachar is a much varied country and has an abundant avifauna. Its ranges of mountains run up to 5000 or 6000 feet, and it has low valleys in plenty. "In the marsh-lands running along the south all kinds of Babblers, Reed-Warblers, &c., have a haunt after their own hearts, and such as require open dry grass country have only to visit Umrang, the hot springs, or similar places. Hungrum and its lofty peaks afford a home for the Tits, rarer Thrushes, and Babblers, which will not descend below 400 feet. Even the Tree-creeper, Wryneck, and many Wrens find this part sufficiently lofty to tempt them to stay and breed; whilst Nuthatches abound in the evergreen-forest in the valleys of the two small streams Laisung and Mahor."

The following species are figured:—*Staphidia castaneiceps*, *Prinia socialis*, *Calliope tschebaiewi.*

103. *Barrett-Hamilton on Sabine's Snipe.*

[Sabine's Snipe, *Gallinago cœlestis*, var. *sabinii.* By G. E. H. Barrett-Hamilton. Irish Naturalist, iv. p. 12 (1895).]

Out of some 56 examples of this form recorded as having been obtained in the British Islands, 31 are from Ireland, 22 from England, and 3 from Scotland. One (in the collection at the British Museum) is said to have been procured near Paris. Mr. Barrett-Hamilton sketches the distribution of Sabine's

Snipe and discourses on the melanic tendencies observed in Ireland, as exemplified in the dark variety of the common rat and also in many of the Irish Lepidoptera.

104. *Bay on Birds from East Greenland.*

[Hvirveldyr fra den danske Expedition til Grønlands Ostkyst 1891-92.—Særtrik af Meddelelser om Grønland, xix. 1894. Ved Edv. Bay.]

This memoir contains an account of the vertebrates obtained in East Greenland by the Danish Expedition of 1891-92. Examples of 32 species of birds were collected, of which one (*Anser segetum*) was new to Greenland, and five were new to East Greenland. The Passeres met with were four, namely, *Saxicola œnanthe, Plectrophenax nivalis, Acanthis* (sc. *Linota*) *linaria,* and *Corvus corax.* Full field-notes are given for all the species.

105. *Beddard's 'Zoogeography.'*

[A Text-book of Zoogeography. By Frank E. Beddard, M.A., F.R.S. Cambridge, 1895.]

Mr. Beddard's text-book, which forms one of the biological series of the Cambridge Natural Science Manuals, does not relate specially to ornithology, but contains many references to the facts of distribution of birds. The author, we are pleased to see, adheres closely to the six principal regions deduced by Sclater in 1857 from the study of bird-life, though he does not fail to record the divergent views of other writers on the subject. Naturally enough, he draws many of his illustrations from the distribution of earthworms, of which group he has lately published such a valuable study.

'Zoogeography' contains a large amount of information on the subject treated of, concentrated into a small compass. In such a mass of particulars it is impossible to avoid a certain number of slips. We may point out one or two as regards birds. *Francolinus kirki* is not limited to the island of Zanzibar; on reference to the B. M. Catalogue (xxii. p. 149) it will be seen that it occurs also on the mainland. *Totanus incanus* (p. 10) is not a good instance of a cosmopolitan Wader: its distribution, though wide, is chiefly confined to the Pacific side of the globe. On the other hand, the Turnstone (*Strepsilas interpres*) is found on the sea-shores nearly all over the world. *Rhea darwini* (see p. 20) is not restricted to Eastern Patagonia and Argentina, but is now known to extend over the Andes into Northern Chili. Moreover it is almost—if not quite—generically different from *Rhea americana*, whilst *R. macrorhyncha* is little more than a subspecies of the latter and is only found in N.E. Brazil, so that *Rhea* should not be described as "limited to the Chilian Subregion" (as is done at p. 111), but *Pterocnemis* (i. e. *Rhea darwini*) may be quite correctly thus spoken of. "*Parus rosea*" (p. 184) (i. e. *Acredula rosea*), the British form of *Acredula caudata*, is by no means exclusively confined to these islands, but is also found in the Netherlands, the west of Germany, and part of France. It is also, we believe, doubtful whether *Sterna virgata* is restricted to Kerguelen and the Crozets, but Mr. Beddard could not have known that when he wrote.

106. *Butler on the Birds of Indiana.*

[Bibliography of Indiana Ornithology. By A. W. Butler. Proc. Indiana Ac. Sci. 1893, p. 108; and Notes on Indiana Birds, *ibid.* p. 116.]

An extract from the 'Proceedings of the Indiana Academy of Science,' which has reached us, contains two papers on the ornithology of that State by Mr. A. W. Butler. We find a bibliography of Indiana ornithology, containing the titles of all previous authorities on the Birds of Indiana, and a set of notes on Indiana Birds, which is stated to be supplementary to a paper on the same subject published in the 'Transactions of the Indiana Horticultural Society' in 1890. Amongst the species now recorded is a single example of the rare *Dendrœca kirtlandi*—the first obtained in this State.

107. *Carr on the Cry of* Nyctibius jamaicensis.

[The "Poor-me-one" (*Nyctibius jamaicensis*, Gm.). By A. B. Carr. Trinidad Field Nat. Club, ii. p. 137, 1894.]

A mysterious nocturnal cry, resembling the words "*poor-*

me-one," is well known in Trinidad, and is commonly attributed to the Little Anteater (*Cyclothurus didactylus*), but Mr. Carr has ascertained that it is really the call of *Nyctibius jamaicensis*.

The "Poor-me-one" calls only from February to June, both months inclusive. It is strictly a nocturnal bird, feeding on night beetles, the large fire-fly being its chief victim. The bird answers readily to a poor imitation of its call, and can be made to follow one at will. It is very unsuspecting, and will not move until one is within a few yards of it. Its prey is caught on the wing, and after each "catch" the bird returns to its perch. Both sexes call, and are alike in plumage.

108. *Chapman (Frank M.) on American Birds.*

[Handbook of Birds of Eastern North America, with Keys to the Species and Description of their Plumage, Nests, and Eggs, their Distribution and Migrations, and a brief Account of their Haunts and Habits, with Introductory Chapters on the Study of Ornithology, how to identify Birds and how to Collect and Preserve Birds, their Nests and Eggs. By Frank M. Chapman. 8vo. New York, 1895.]

To those who dwell on the Eastern slope of the North-American Continent and have a taste for ornithology this handbook will be an instructive and convenient manual. Preparatory chapters on the study of birds, at home and out of doors, and on collecting birds and their nests and eggs, introduce us to a systematic account of the birds of North America east of the 90th meridian. In this will be found the specific characters, range, and mode of nesting of the birds inhabiting this area, arranged according to the nomenclature and classification of the A. O. U. Numerous illustrations are added, both in the text and in plates, taken mostly from photographs.

109. *Clark on the Pterylography of the* Caprimulgidæ *and* Strigidæ.

[The Pterylography of certain American Goatsuckers and Owls. By Hubert Lyman Clark. Proc. U.S. Nat. Mus. xvii. p. 551.]

Mr. Clark has examined a series of specimens of the different forms of American Goatsuckers and Owls. These specimens have been "birds in the flesh, either fresh or alcoholic," as the use of skins in such examinations "seems to be of questionable value." We are also pleased to see that Mr. Clark adopts the sensible plan of numbering the primaries from the wrist outwards, as advocated by Wray. Specimens of all the four genera of North American Caprimulgidæ have been carefully studied, and the result is a valuable piece of work, which shows that *Chordeiles* stands apart from the other three genera as regards its pterylosis, as it does in other points of its structure. Good illustrative figures are given of the pterylosis of *Phalænoptilus*, *Antrostomus*, *Nyctidromus*, and *Chordeiles*.

Of the Striges Mr. Clark has examined nine species, belonging to eight genera. There seems to be no doubt that *Micropallas* diverges from the other Owls in having only 10 rectrices. But *Strix*, as already stated by Nitzsch, shows the greatest variation from the normal Owl-type. On the whole the author, after comparing in detail the pterylographical characters of the *Caprimulgi* and *Striges*, comes to the conclusion that these two groups have a "certain degree of affinity," in which we quite agree with him, although Dr. Bowdler Sharpe has recently stated that this idea "is now scouted." We believe, in fact, that the Owls come nearer to the *Caprimulgi* than to the *Accipitres*.

110. *Emerson on the Fauna of the Norfolk Broads.*

[Birds, Beasts, and Fishes of the Norfolk Broadland. By P. H. Emerson, B.A., M.B. (Cantab.). Illustrated with Sixty-eight Photographs by T. A. Cotton. Pp. 398. 8vo. London, 1895. David Nutt.]

Mr. Emerson claims to have passed more than eight years on the Broads, and has made up his mind that the late Mr. Henry Stevenson "did not know intimately the outdoor life of the birds he wrote about from personal observation," besides being of an "inartistic nature." So Mr. Emerson sets him and many others straight; tells us that Bewick's birds—as birds—are all caricatures; speaks of "the monstrous and gaudy decorations of Selby, Gould, Dresser," and says that the illustrations to Booth's 'Rough Notes' make the student gasp for breath. To improve our corrupt taste he gives us 68 photographs, some from life and some from mounted groups, the best of which—by comparison—have little to do with Broad-life; for instance, the Merlins feeding their young, and the Gannets in the downy stage. In his letterpress he is continually striving to show how much better informed he is than other people, and how he has taken his facts direct from nature; yet his own mistakes are numerous, while his disregard of the laws of syntax appals the reader who is struggling to grasp the author's meaning. That he should include the Swift as one of the four "Swallows" might be expected, but when he states that the *first* to come over is the Swallow, appearing early in April, we would ask when do the Sand-Martins arrive? It is satisfactory to learn that Whinchats are *paired* by the beginning of *June*, because if they delayed much longer it might be bad for the brood! "Parrot-like" is the term he considers appropriate to the beak of the Bullfinch. To conclude, here is a gem of composition:—"The Grey Crow will sit for hours in damp weather, moping like a Wood-Pigeon. Although inaccurate literary hodmen have said they never keep still, any gunner in Norfolk could teach these pseudo-scientists better." Poor restless hodmen!

111. *Field Columbian Museum's first Publication.*

[An Historical and Descriptive Account of the Field Columbian Museum. Vol. I. no. 1. Chicago, U.S.A.: December, 1894.]

If we are correct in what we gather from an examination of the first publication of the "Field Columbian Museum," the objects of this new institution, which was opened on the 2nd June, 1894, are to "commemorate the World's Columbian Exposition, and to create an additional factor in the world's educational equipment." After a report of the proceedings on the day of opening, the present publication gives historical accounts of the numerous and important collections presented to the Museum through various Departments of the Chicago Exposition. Special reports upon the present state of other departments of the Museum follow, and amongst these is one on the Department of Ornithology, of which, as we have already announced, Mr. Cory is the Curator and Mr. Cherrie the Assistant Curator.

Besides the mounted collection of birds, in which 650 species are represented, including a pair of the extinct Labrador Duck (*Camptolæmus labradorius*), the Department of Ornithology is fortunate in possessing the Cory collection of West-Indian birds, and the excellent ornithological library formerly belonging to the same gentleman. Several good additions have been already received, and the Department has sent a collector to San Domingo, while the Curator himself is at work in Florida.

112. *Hartlaub on Extinct Birds.*

[Ein Beitrag zur Geschichte der ausgestorbenen Vögel der Neuzeit sowie derjenigen deren Fortbestehen bedroht erscheint. Von Dr. G. Hartlaub. Abh. naturw. Ver. Bremen, xiv. Heft 1, 1895.]

In this memoir our veteran associate gives us an interesting essay on the most noticeable forms of ornithic life that have recently become extinct, and on others that are in danger of becoming so. After alluding to the principal previous authorities on this subject, Dr. Hartlaub specifies the various agencies that have tended to produce this lamentable result—such as forest-fires, the felling of forests for purposes of cultivation, the introduction of cats, pigs, rats, sparrows, and other animals into foreign lands, and the destruction of millions of beautiful birds to provide ornaments for ladies' hats. But, as Sir Walter Buller has remarked, there are doubtless other agencies tending in the same direction, of which we have at present no information.

Dr. Hartlaub's account of species threatened with extermination gives particulars concerning some 16 members of this unhappy class. As regards the Carolina Parrakeet and the Californian Vulture, however, we are not sure that things are so bad as they are painted. There are even now examples of *Conurus carolinensis* to be seen alive in the Zoological Society's Gardens, and, from what we read in 'The Auk,' it would appear that *Pseudogryphus californianus* is still not so very rare in certain remote districts of the Far West.

The still more melancholy list of birds actually extinct, and not by any possibility to be revived, is a longer one. Nineteen bird-types, many of them of the most remarkable form, have thus passed away for ever, and of some of these (*Nestor norfolcensis*) not even a single specimen is to be found in our museums, whilst others (*Prosobonia leucoptera*) are now known only by single specimens.

113. *Harvie-Brown on the Island of Rockall.*

[Rockall. By J. A. Harvie-Brown, F.R.S.E., F.Z.S. Proc. R. Phys. Soc. Edinb. xiii. p. 63 (1895).]

It will be remembered that Messrs. Harvie-Brown and T. E. Buckley, in their 'Vertebrate Fauna of the Outer Hebrides,' gave an account of this remote islet, so far as was then known to them. Since the publication of that work their attention has been drawn by Mr. Miller Christy to a description written in 1821 by Surgeon Alexander Fisher, R.N., in his 'Narrative of a Voyage of Discovery to the Arctic Regions in H.M. Ships 'Heckla' and 'Griper' in the years 1819 and 1820'; and this is now printed, with additional information obtained through Mr. John Cordeaux from the Grimsby smackowners and from other sources. The most definite of the slight particulars respecting the birds found on that rock is, however, from Herr H. C. Müller, of the Færoes; from which it appears that Captain Johannes Hansen, of Thorshaven, landed in 1887 and found breeding there *Uria bruennichi*, *Alca torda*, *Fulmarus glacialis*, and *Puffinus major*. Confirmation as regards the last-named species is desirable, for the evidence is at present very strong that the Great Shearwater does not breed anywhere in the northern hemisphere. (See abstract of Capt. Collins's remarks in Saunders's 'Manual of British Birds,' p. 716.)

114. *Headley on the Structure and Life of Birds.*

[The Structure and Life of Birds. By F. W. Headley, M.A., F.Z.S. 8vo. London: Macmillan & Co., 1895.]

Mr. F. W. Headley may be congratulated on having struck the happy mean between excessive aridity and a too superficial treatment of his subject in the volume before us; it is at once sound as to anatomical fact and pleasant reading, a combination which, though happily far from rare nowadays, is still by no means universal. In this book the bird is considered—and not unreasonably—mainly from the point of view of a flying animal; but Mr. Headley does not neglect the other aspects of scientific ornithology. He deals—perhaps a little too briefly—with the evidence of the ancestry and gradual evolution of birds, availing himself here, as elsewhere, of the most recent sources of information; and towards the end is a sketch of the current theories of protective coloration, sexual selection, and instinct, so far as they bear upon the particular group of animals. In his summaries Mr. Headley is judicial, and not urged by any desire to push a favourite theory or theories; while in this book, as in several upon other branches of natural history that have recently appeared, we find a healthy reaction from the irritating "cock-sureness" of a decade since, which argues well for the advance of our science. We know of no book, at any rate of no modern book, which covers precisely the ground of Mr. Headley's manual; it strengthens a decidedly weak point in ornithological literature, and this fact, coupled with the excellence of the illustrations, should ensure for it a wide circulation.

115. *Herman on Bird-Migration in Hungary.*

[Die Elemente des Vogelzuges in Ungarn bis 1891. Verfasst von Otto Herman. 4to. Budapest, 1895. Zweiter Intern. Orn. Congr. Budapest, 1891.]

Mr. Herman has favoured us with a copy of his dissertation on the migration of birds, which we commend to those amongst us who take an interest in this still somewhat mysterious branch of our subject. After a *résumé* of the often antagonistic opinions of previous authorities, the observations taken in Hungary at 17 stations are introduced and discussed, particularly as regards the Chimney-Swallow and White Stork. Numerous maps and tables illustrate this excellent piece of work.

116. *Jackson on the Great Frozen Land.*

[The Great Frozen Land. By Frederick George Jackson. Edited from his Journals by Arthur Montefiore. London: Macmillan & Co., 1895.]

As a "preliminary canter" to the Franz-Josef-Land Expedition, Mr. Jackson undertook a winter journey across the tundras of Arctic Russia, from Waigatz Island to Archangel, and thence on to Vadsö. Of this not very comfortable but instructive journey, and of the Samoyeds and their ways, an account is given in the present volume, which has been edited from Mr. Jackson's journals by Mr. Arthur Montefiore. An appendix on the ornithological results of the expedition is added by Mr. J. R. Jeaffreson. On this list of 58 species, for it is little more, a few footnotes only being added, we venture to borrow Mr. Seebohm's remarks recently published in 'Nature' (vol. lii. p. 385):—

"Unfortunately the ornithological part of Mr. Jackson's volume has not fallen into such good hands. There are a dozen or more gross mistakes in the spelling of the names of birds, and in addition there are some curious inconsistencies. In the preliminary observations we are told that Mr. Jackson brought home 'Swans—not Bewick's—but the common variety of that region,' in spite of which the only Swan in the list (No. 28) is Bewick's Swan. Mention is made of Grossbills (does the writer mean Crossbills or Grosbeaks?). Of the Little Stint (No. 45) it is stated that the only authentic eggs were those taken by Middendorff. There is no reason to believe that Middendorff ever found the eggs of the Little Stint. The eggs which he records as being those of *Tringa minuta* were probably those of *Tringa ruficollis*, or possibly those of *Tringa subminuta**. The first identified eggs of the Little Stint were those taken on July 22nd, 1875, by Mr. Harvie-Brown, on the eastern shores of the lagoon of the Pechora, and a few days later a score had been obtained by the expedition. Other eggs, equally authentic, have since been taken in Lapland, Nova Zembla, and Kolguef. It is extremely unlikely that the identification of the species in the list is always correct. No. 10 doubtless refers to *Phylloscopus tristis*, and not to the Chiffchaff; No. 12 is more likely to be a Redpoll than a Siskin; No. 39 is doubtless *Ægialitis hiaticula*, and not *Æ. curonica*; and No. 53 is more likely to be *Stercorarius richardsoni* than *S. catarractes*. In but few cases is the exact locality given, so that, on the whole, we must condemn the list as worse than useless."

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* [On this question, however, see Prof. Newton's letter in 'Nature,' lii. p. 438.—Edd.]

117. *Meyer and Wiglesworth on Birds from North Celebes.*

[Bericht über die von den Herren P. u. F. Sarasin in Nord Celebes gesammelten Vögel. Von A. B. Meyer u. L. W. Wiglesworth. Abh. u. Ber. k. zool. u. anthr. Mus. Dresden, 1894-95, no. 8.]

After their journey to Ceylon the brothers Sarasin[*] selected Celebes as a new field of work, and proceeded there about two years ago. Two short papers have already been published to describe their newly-discovered species. The authors now give us a complete systematic account of the whole of Messrs. Sarasin's collections from the above island, consisting of 335 bird-skins, referable to 152 species. Altogether Messrs. Sarasin have discovered in Celebes six new species, of which one (*Myza sarasinorum*) belongs to a new genus of Meliphagidæ; and they have, besides, added seven (previously known) species to the avifauna of this island.

118. *North on Birds from the Gilbert Islands.*

[Note on the Occurrence of *Spatula clypeata* and *Urodynamis taitensis* in the Gilbert Group. By A. J. North. Proc. Linn. Soc. N. S. Wales, ser. 2, vol. ix. p. 584, 1895.]

At a recent meeting of the Linnean Society of New South

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[*] See their 'Ergebnisse naturwiss. Forschungen auf Ceylon,' 3 Bde. 1887-93.

Wales, Mr. North exhibited specimens of two birds from the Gilbert Islands (lately annexed by Great Britain) obtained by the British Resident, Mr. Swayne. One of these was the Common Shoveler (*Spatula clypeata*), which occasionally straggles thus far. The other was a nomadic Cuckoo (*Urodynamis taitensis*), said to be the only land-bird found in the Gilbert group, where, however, it does not breed.

119. *Richmond on a new Genus of Trogons.*

[Diagnosis of a new Genus of Trogons (*Heterotrogon*), based on *Hapaloderma vittatum* of Shelley; with a Description of the Female of that Species. By Charles W. Richmond. Proc. U.S. Nat. Mus. xvii. p. 601.]

Mr. Richmond has examined a series of specimens of the rare Trogon (*Hapaloderma vittatum*, Shelley) obtained by Dr. Abbott on Mount Kilimanjaro, and has come to the conclusion that this species should be generically separated from *Hapaloderma narina*. He proposes the name *Heterotrogon* for the genus, and gives full descriptions of both sexes.

120. *Seebohm on the Classification of Birds.*

[Classification of Birds; an attempt to Diagnose the Subclasses, Orders, Suborders, and Families of existing Birds. Supplement. By Henry Seebohm. London: Porter, 1895.]

Mr. Seebohm has presented us with a "Supplement" to his essay on the 'Classification of Birds,' published in 1890 (see Ibis, 1890, p. 379). Since that date, in addition to original research, he has had an opportunity of studying what Fürbringer, Lydekker, Gadow and others have written upon this subject. The result has led him to see the necessity of certain corrections and modifications in his original views, which are put before us in the present pamphlet.

Mr. Seebohm now divides existing birds into five "Subclasses": Sphæniscomorphæ, Pelargomorphæ, Coraciomorphæ, Ægithomorphæ, and Dromæomorphæ. These subclasses are divided into 31 suborders, the limits of which, as a general rule, agree very fairly with what are nowadays considered by most systematists as the leading primary divisions of the whole class. Mr. Seebohm gives us a mass of information as to many important details of structure met with in the various orders and suborders which cannot fail to be very useful to ornithologists.

121. *Shufeldt on Isolated Species of Birds.*

[Some of the "Outliers" among Birds. By R. W. Shufeldt. Popular Science Monthly, xlvi. p. 760. New York, 1895.]

This is an interesting magazine-article, in which the author treats of such species as *Opisthocomus cristatus, Psophia leucoptera, Eurypyga helias, Rhinochetus jubatus, Dicholophus cristatus, Gypogeranus serpentarius, Scops umbretta, Palamedea cornuta, Heteralocha acutirostris, Menura superba*, and others; those above specified being illustrated by cuts, many of them taken—with due acknowledgment—from Professor Newton's ‘Dictionary of Birds.”

122. *Smith (Rev. A. C.) on the late John Legg.*

[Memoir of Mr. John Legg, of Market Lavington, Wilts: an advanced Ornithologist of the 18th Century. By the Rev. A. C. Smith. Wiltshire Archæol. & Nat. Hist. Mag. xxviii. p. 5.]

The subject of this memoir was a little-known writer on ornithology between 1779 and 1788, and his views on the migration of birds appear to have been considerably in advance of his time.

123. *Stone on the Birds of the Delaware Valley.*

[On the Birds of Eastern Pennsylvania and New Jersey, with Introductory Chapters on Geographical Distribution and Migration, prepared under the direction of the Delaware Valley Ornithological Club. By Witmer Stone. Pp. 185. 8vo. Philadelphia, 1894.]

The great city of Philadelphia lies in the centre of the Delaware valley, and it is fit that the numerous ornithologists of that important district should have a handbook of their own, containing a summary of the distribution and occurrence of the birds that are found in the country. Mr. Witmer

Stone appears to have well performed his task, as will be seen by the volume now before us, which is principally occupied by an annotated list of the birds of Eastern Pennsylvania and New Jersey. The species recognized as occurring within these limits are 352 in number. A complete bibliography and illustrative maps are added.

124. *Suchetet on the Bimaculated Duck.*

[Histoire du Bimaculated Duck de Pennant, confondu longtemps avec l'*Anas glocitans* de Pallas; et Notes sur plusieurs autres oiseaux du même genre. Par André Suchetet. Pp. 48. 8vo. Lille, 1894.]

The author, who is already well known for his writings on hybrids, especially among the Anatidæ, devotes 14 pages to exposing the errors committed by Pennant and his successors —a terrible list—who identified the "Bimaculated Duck" with *Anas glocitans*, Pallas. He goes on to consider the existing specimens of this Duck, and concludes that the weight of evidence is in favour of the birds being hybrids between the Mallard and the Teal; after which other hybrid Ducks are discussed. Two coloured plates by Keulemans are given : the first representing Degland's bird in the Douai Museum, supposed to be a cross between *Anas boscas* and *Querquedula crecca* ; the second, an apparent hybrid between *A. boscas* and *Chaulelasmus streperus*, in the collection of Mr. E. Hart, of Christchurch, Hants.

125. *Thurston on Rámésvaram Island.*

[Rámésvaram Island and Fauna of the Gulf of Manaar. Second edition, revised, with Additions. By Edgar Thurston, C.M.Z.S., &c. Bull. Madras Govern. Mus. no. 3, 1895.]

Mr. Edgar Thurston, Superintendent of the Madras Government Museum, has kindly sent us a copy of the second edition of his excellent account of Rámésvaram Island, on the line of Adam's Bridge, between India and Ceylon. Marine animals are, of course, its principal product, and it would seem to be a perfect spot for such a marine biological station as has been talked of in India. But Mr. Thurston procured there a certain number of birds, of which he gives us a list (*op. cit.* p. 88). The greater number of these are land-birds.

126. *Trouessart on Zoological Geography.*

[La Géographie Zoologique, par le Dr. E. L. Trouessart. Paris, 1890.]

Dr. Trouessart has kindly sent us a copy of his 'Géographie Zoologique,' which, although published several years ago, had escaped our attention. Like Mr. Beddard's volume above noticed, it is a useful compendium, with much valuable information condensed into a small compass. Dr. Trouessart, we are glad to see, adheres mainly to the six great Regions of Sclater and Wallace, though he wishes to add two to their number—an Arctic and an Antarctic Region [*]. Of these we need only say that they are in our opinion "quantités négligeables," though there is more ground for the recognition of the latter than for that of the former. We will venture to add a few remarks on what we deem to be slight inaccuracies in the portions of Dr. Trouessart's manual which relate to birds.

The Penguin of the Galápagos (*op. cit.* p. 43) is *Spheniscus "mendiculus,"* not *"mendicatus,"* and the Penguin of the Cape (*Spheniscus demersus*) is quite different from that of the Falkland Islands (*S. magellanicus*). See "Birds" of the 'Challenger' Expedition, p. 125, pls. xxvii. & xxviii.

The Lesser Sheath-bill (*Chionis minor*) differs from its congener (*C. alba*) not only in size (*cf. op. cit.* p. 45), but in its black bill and other particulars. There are at present examples of both the species living in the Zoological Society's Gardens. On the west coast of North America at least (contrary to what our author says, p. 264), Humming-birds go far north of 40° N. lat., *Selasphorus rufus* being a regular summer visitor at Sitka (57° 3′ N. lat.). In the east of

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[*] The six Regions of Sclater are stated (p. 13) to have been founded in 1835 in a 'Treatise on the Geography and Classification of Animals in Lardner's Cabinet Cyclopedia.' This is altogether a mistake. They were founded in June 1857, in a paper read before the Linnean Society of London, entitled "On the General Geographical Distribution of the Members of the Class Aves." See Journ. Linn. Soc. vol. ii. p. 130.

N. America also *Trochilus colubris* far passes the limit here assigned to the group.

We may also remark that it is not quite correct to say that there are no fishes in the "Arctic" Region. Col. H. W. Feilden found examples of a species of charr (*Salmo*) in a lake near the winter-quarters (1875–76) of H.M.S. 'Alert' in 82° 27′ N. lat. (See P. Z. S. 1877, p. 294.)

127. *Verrill on Birds from the Antarctic Islands.*

[On some Birds and Eggs collected by Mr. Geo. Comer at Gough Island, Kerguelen Island, and the Island of South Georgia, with Extracts from his Notes, including a Meteorological Record for about Six Months at Gough Island. By G. E. Verrill. Trans. Conn. Ac. ix. p. 430, 1895.]

Mr. Verrill describes the collections made by Mr. G. Comer during two voyages to the southern hemisphere for sealing purposes. From South Georgia Mr. Comer brought home two skins of an Albatross and eggs of eight species of birds, from Kerguelen and Gough Islands 23 bird-skins of 14 species, and about 350 eggs of 13 species, besides some skeletons. He also made very full field-notes.

The species referred to and commented upon by Mr. Verrill in the present paper are 20 in number. Amongst these the most remarkable are—*Porphyriornis comeri*, a new flightless Gallinule, discovered by Mr. Comer, and already described by Mr. Allen (see Ibis, 1893, p. 125); and *Thalassogeron eximius*, sp. n., a supposed new Albatross from Gough Island, on which we should like to have Mr. Salvin's opinion. It is nearest to *T. chlorhynchus*. Altogether Mr. Comer found 15 species of birds on Gough Island, two being so-called "Sparrows," of which unfortunately no specimens were preserved. In South Georgia Mr. Comer met with 17 species. Mr. Verrill does not appear to have known of Pagenstecher's paper on the birds of this island, published in 1885 (see Ibis, 1885, p. 319). Extracts from Mr. Comer's journals are added, and on two uncoloured plates are given figures of *Thalassogeron eximius* and of two species of Penguin.

128. *Verrill on the Birds of Dominica.*

[Notes on the Fauna of the Island of Dominica, British West Indies; with Lists of the Species obtained and observed by G. E. and A. H. Verrill. By G. E. Verrill. Trans. Conn. Ac. viii. p. 315, 1892.]

Messrs. G. E. and A. H. Verrill visited Dominica in March, April, and May, 1890, and made the collection of birds, of which an account is given in the present memoir, at four different stations on the island. The specimens have been identified by Mr. Allen. The species, 54 in all, are arranged and named according to the system of the A. O. U. Good field-notes are appended. Mr. Verrill adds a complete list of the birds of Dominica, inserting in their proper places the species of which specimens had been obtained by previous authorities. This raises the total number of Dominican birds to 64, of which the two fine Parrots *Chrysotis augusta* and *C. bouqueti*, and some five or six Passeres, are peculiar to the island.

129. *Waugh and Lataste on Chilian Birds.*

[Une Semaine de Chasse, au mois de juin, dans la hacienda de San Alfonso (département de Quillota). Par Enrique Waugh et Fernando Lataste. Procès-Verb. Soc. Sci. du Chili, 1894, p. clxvii.]

The authors give a list, with field-notes, of a collection of birds made during a week's stay at the hacienda of San Alfonso, in the department of Quillota, Chili, where specimens of 48 species were obtained or observed. *Turdus fuscater*, we should say, as we have remarked on a previous occasion (above, p. 164), must be a mistake for *Turdus magellanicus*.

130. *Winge on Birds observed at the Danish Light-stations in* 1894.

[Fuglene ved de danske Fyr i 1894. 12te Aarsberetning om danske Fugle. Ved Herluf Winge. Vidensk. Medd. naturh. Foren. i Kjöbenhavn, 1865, p. 1.]

This is M. Winge's usual report on the birds observed at the Danish Light-stations, arranged as in the preceding reports (*cf.* Ibis, 1894, p. 164). Notes are given on 66 species, and on the exact dates and places of their occurrences. Further notes are added in conclusion: amongst which are remarks upon the remains of Pelicans in the Kitchen-middens, and on the supposed recent occurrence of this bird in Denmark (*cf.* Ibis, 1894, p. 348, and 1895, p. 294); also on birds lately received from the Faroes and from Greenland.

XLI.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed "to the Editors":—

Sirs,—Last year the Palestine Redstart (*Ruticilla semirufa*) was, as usual, abundant around our mountain-camp in the Lebanon. The males sang freely, and I was impressed afresh with the curious rustling sound they make at the end of the song proper, just as if the birds were scraping backwards and forwards with their bills among dry leaves. I have a strong impression of having read somewhere that the Common Redstart (*R. phœnicura*) utters a similar sound in connection with its song; but none of the books to which I have access at present make any mention of it, and *R. phœnicura* does not sing during its visits to us. No doubt some of your readers can tell me what the facts are in reference to the latter species.

If this sound—apparently useless—be common to both species, that would argue either some unknown and somewhat important function, or else it would show how tenaciously a character may be perpetuated by heredity in the absence of selection. Could such an unmusical finale to an otherwise melodious performance have a function analogous to what Dr. Wallace calls "recognition marks"? I mean, as evidence to the female that her suitor was, so to speak, of her own station in life. It is not often that I see *R. semirufa* and *R. phœnicura* in the same place and side by side; but their areas do overlap to some extent in the Lebanon, though I cannot say whether that is ever the case in the breeding-season.

Yours &c.,
W. T. VAN DYCK, M.D.

Beyrout, Syria,
January 20, 1895.

SIRS,—Lieutenant W. Robinson, author of that recent book 'A Flying Trip to the Tropics,' intends to leave New York on June 13th by one of the "Red D" line of steamers for Curaçao and La Guayra, *en route* to the island of Margarita, lying off the coast of Venezuela.

Mr. Robinson had his attention called to this island, the fauna of which seems to be imperfectly known, by the notices which appeared in the January number of 'The Ibis' (pp. 144–172).

Mr. Robinson is an enthusiastic ornithologist, as attested to by his observations and descriptions of the birds of Colombia, recorded in the book above noted; and, since he goes mainly in search of birds, we may reasonably look forward to gratifying results from his visit.

Yours &c.,
SHELLEY W. DENTON,
Curator, Brewster Museum,
Cambridge, Mass.

Wellesley, Mass., U. S. A.,
June 7, 1895.

SIRS,—I was unable to be present at the 25th Meeting of the British Ornithologists' Club on April 17th, but I read in the 'Bulletin' that it is likely that a new edition of Capt. Shelley's 'Birds of Egypt' will be brought out. If so, will you let me mention that, with regard to Bonelli's Eagle, Capt. Shelley says, "I have never met with it during my several visits to those countries (Egypt and Lower Nubia), nor have I seen an Egyptian specimen in any collection." I shot a bird of this species myself on Feb. 6, 1872, near Dendera, when flying over the dahabeyah, and it is now stuffed in my collection; and Mr. J. H. Gurney, Jun., in his 'Rambles of a Naturalist' (six months' bird-collecting in Egypt), p. 131, says:—"A fine female was shot on the 22nd of April at Beltisnah. It had been chasing Pigeons, and was resting on a sand-bank. It was the only specimen which we met with in our travels. Canon Tristram has a specimen which was killed somewhere above Cairo by Sir W. Medlycott."

Yours &c.,

THOMAS PARKIN.

Fairseat, High Wickham, Hastings,
Aug. 2, 1895.

SIRS,—I regret exceedingly to find that, by some strange mischance, two or three mistakes have found their way into the paper on the pterylography of the Tinamous which was published in 'The Ibis' for January last.

These mistakes were made in connection with the cervical moieties of the spinal and ventral tracts, and to avoid complication I will redescribe them in the terms in vogue at the time the paper was written, instead of adopting those suggested by me in my latest paper "On the Pterylography of the Hoatzin," published in the July number of this volume.

The sum of my transgressions is this: that I described under the heading "Pteryla colli lateralis" (p. 2) what is really neither more nor less than the cervical moiety of the Pteryla ventralis. The simplest way of setting this right will be to rewrite, as I have just said, the description of both spinal and ventral tracts.

Pt. spinalis.—Arising at the nape of the neck, it divides soon afterwards into two branches. Coalescing between the humeral tracts, they soon after again divide, and at the same time increase greatly in width. Just in front of the thigh a branch is sent down to the femoral tract, the main stems of the tract retain their independence for a short distance further, and then fuse at a point roughly corresponding with a line drawn across the back from the acetabulum. The remainder of the tract is now continued backwards, finally to blend with the pteryla caudæ.

Pt. ventralis (Pl. I., *Pt. coll. lat., Pt.v.*).—The anterior end of this tract along its dorsal border has fused with the Pteryla spinalis (Pl. I., *Pt. coll. lat.*). About halfway down the neck it divides into two, and exchanges its ventral for a lateral course. At the shoulder a branch is sent upwards and backwards to join the humeral tract: the main trunk—the pt. ventralis of the original paper—on the breast, again divides into a strong, narrow, outer, and a broad, but weaker, inner branch, the two being separated by a narrow apterion. The outer branch passes into the pteryla femoralis, sending at the same time sharply forward a narrow double row of feathers to join the hypopteron. The inner tract is probably continued down to the anus, but, the bird having been eviscerated, this region is too much disturbed to afford trustworthy data.

Apt. trunci laterale.—Arising from the side of the neck, rather more than halfway down, it passess backwards, dividing the humeral from the spinal tract; it then expands into a large space embracing the whole side of the trunk, but divided more or less completely into two portions. The first of these two extends from the summit of the shoulder backwards to the anterior margin of the femoral tract. The second arises between the two branches of the pteryla ventralis; running backwards between the leg and trunk, it sweeps round the femoral tract, and serves to divide it from the pt. spinalis. The first of these two spaces, as will be seen in Pl. I., is more or less completely subdivided by a double row of feathers from the outer branch of the pt. ventralis to the hypopteron.

The following corrections are therefore necessary:—For the description of the pt. spinalis (p. 2), and pt. ventralis (p. 3), and apt. trunci laterale (p. 6), see above.

Erase the term *pt. colli lateralis* and the text appertaining thereto on p. 2, and for *apt. colli lateralis* (p. 9) read *apt. trunci laterale.*

Pl. I., for *Pt.coll.lat.* read *Pt.v.*

Pl. I., for *Apt.c.lat.* read *Apt.t.lat.*

Pl. II., for *Apt.c.lat.* read *Apt.t.lat.*

Such amends as lay in my power I trust I have made, and hope that by the publication of this correction in the present volume I shall save my readers much trouble and annoyance, and myself many well-merited anathemas.

Yours &c.,
W. P. PYCRAFT.

University Museum, Oxford,
August 1, 1895.

M. Boucard's Collection of Birds.—M. Adolphe Boucard, well known to ornithologists for the excellent collections which he formerly made in Mexico (1858–59), has presented the whole of his private collection of birds to the Musée d'Histoire Naturelle, of Paris. This will be a most valuable addition to the great French National Collection, as it embraces nearly 25,000 specimens and a great many types, such as that of *Chiromachæris coronata.* The usual practice at Paris until lately has been to mount all specimens for the Galerie; but the Boucard Collection will be kept unmounted, and form an excellent basis for a skin-collection. M. Oustalet is now engaged in arranging it.

The Manchester Museum, Owens College.—The Report of the Manchester Museum (1895) informs us that a "beginning has been made with the arrangement and labelling of the collection of birds. The number of stuffed skins in the collection is very large, much larger than can be accommodated in the present cases; but many of the specimens are in a very unsatisfactory condition, and of some, even of the commoner forms, there are no examples which are in a fit state for exhibition. Arrangements have been made with Mr. Ogilvie Grant, of the British Museum, to name the greater part of the collection, and many hundred specimens have now passed through his hands. These are now being arranged in systematic order and provided with labels for the individual species, and also with descriptive labels for the families. The Museum is indebted to Miss L. B. Samuels for much voluntary assistance in cataloguing and arranging this collection."

The Australian Museum, Sydney.—From the Report of the Trustees of this Museum for 1894 we learn that Dr. E. P. Ramsay, after twenty years' service, has resigned the Curatorship owing to ill-health, and has been succeeded by Mr. Robert Etheridge, Jr., formerly of the British Museum. The operations of the Museum have been much hampered during the past year by the diminution of the Parliamentary grant, and very few additions have been made. The only publication issued since the last Report has been pt. iv. of the Catalogue of the Birds—Picariæ, subord. Halcyones, by Dr. E. P. Ramsay.

Birds in Arabia Felix.—In Dhofar, on the southern coast of Arabia, Mr. Theodore Bent (Geogr. Journ. vi. p. 121) appears to have hit upon a district that may well deserve the name of Arabia Felix. On entering the mountains by the Wadi Ghersid the explorers found themselves in a "valley covered with the richest tropical vegetation." A "small and exquisitely beautiful lake" was "well stocked with ducks and other water-birds," and the fig-trees were "full of birds." In another valley, behind Taka (the Abyssapolis of Ptolemy), is a lake full of bulrushes, with "quantities of birds" on it—"Ducks, Herons, and Waterhens," while the "banks are adorned with very fine timber." Here is a fine opening for an ornithological tour. Could not our friend Col. Yerbury, who has so ably explored Aden, extend his researches to Dhofar? Not a single specimen has yet been obtained in this district.

The Summit of Roraima and its Birds.—The last number of 'Timehri' contains the following account by Mr. Quelch of his recent ascent of Roraima:—"Since the discovery of a path to the summit of this famous mountain, and its first ascent in 1884 by Messrs. im Thurn and Perkins, several orchid-collectors have made the ascent; but little, however, has been contributed by them to our knowledge of its topography. Taking advantage of the opportunity afforded by our expedition to the great Savannah, Mr. F. V. McConnell and I, accompanied by Mr. C. A. Lloyd, determined to make a more detailed examination of the summit than had hitherto been attempted. Leaving the Makusi village of Kwaimatta with 39 Makusi and Arrekuna bearers, and with two taxidermists, in the middle of October, we reached the Arrekuna village of Kamaivawong, at the base of the mountain, on November 3rd, after a most arduous walk of 17 days across the intervening mountains, portages of the Ireng and Kotinga Rivers having been made at Karona Falls and Sokoking respectively.

"Three days were spent in reconnoitring the path and in building a half-way house at a height of 6400 ft., and on the 7th the ascent was made to the summit along the path discovered by Mr. im Thurn, which we found to present no difficulty whatever as regards climbing, though the walking was intensely arduous and tiring.

"The general aspect of the plateau on the summit fully bears out the description of it given by Mr. im Thurn, though our more extended examination during the two nights and three days spent there enables us to add to it considerably.

"The summit should be described as presenting, not the aspect of a hollow basin, but of a plateau which has been worked down by aërial denudation into an altogether irregular and broken series of deep valleys and precipitous ridges, the total differences between the lowest and highest points being more than 400 ft. The ridges are frequently broken into isolated peaks, the highest being 8740 ft. above the sea-level, presenting the aspect of piles and terraces of irregular boulders and masses.

"The valleys wind about in almost an endless maze, with lake-like shallow pools, more or less obscured by an abundant dwarf vegetation. After the slightest rains the surplus water is carried off along these valleys as an overflow to the ravines on the edge, descending to the slopes below as waterfalls to swell the various surrounding streams. Many small trees are spread over the valleys and climb up in a densely-packed bushy jungle along the western slopes of the higher ridges, the common species of *Bonnetia* (*B. roraimæ*) being at once the most abundant and the largest, reaching to a height of more than 30 feet. Three species of birds, a mammal, a toad, an earthworm, a wood-louse, two spiders, two myriapods, a dragon-fly, a butterfly, and a few other small insects—chiefly beetles—are to be found on the summit, and doubtless more complete examination will greatly extend the list. The sandstone and conglomerate which form the entire mass of the summit are worked into almost every conceivable grotesque shape, and are more or less darkened by weather and saturation with water, fine layers of sandy shale here and there projecting from the mass. Clouds and mists of various degrees of density constantly lie on or pass across some portion of the plateau and make it a difficult matter to secure good photographs. The cold winds and low temperature (47° F.) make it necessary to secure good shelter for the night; while the rugged character of the plateau entails a considerable amount of time for its exploration.

"Descending on the evening of the 9th, at the urgent entreaty of our Indians, to the village at the base of the slope, we had to make arrangements for leaving on the 12th, and after a journey of 11 days, *viâ* the portage of Kalisha-sararu, on the Kotinga, and Karona Falls, on the Irena, we arrived at Kwaimatta on the 23rd November, after an absence of 36 days."

The bird-skins obtained on Roraima on this occasion have been brought to London by Mr. McConnell and examined at the British Museum. As Mr. McConnell kindly informs us, they have been referred to the following species:—*Cyclorhis guianensis*, *Diglossa major*, and *Zonotrichia pileata*—all well-known Guianan species. Besides these Mr. Quelch tells us (*in litt.*) that a fine Humming-bird was seen, but not obtained.

Nesting of Geocichla nævia *in British Columbia.*—Mr. W. E. Brooks sends us the following extract from a letter received on the 18th of June from his son in British Columbia:—

"The trip we have just returned from was up to and beyond Summit or Chilliweyuk Lake, at the source of the Veddar River. Our party consisted of a Kansas man called Williams, who was our guide, three others, and myself. Summit Lake was reached on the fourth day, a fine sheet of water about 7 miles long by 1½ broad, rugged rocks running up on all sides. The water-level of the lake is about 2500 feet, and the mountains rise 5000 to 7000 feet above that. I went principally to get Rocky-Mountain Goats. We got into the goat-country all right enough, but, not knowing their habits at this season, we looked for them right up on top of the mountains among the snow, when they were down in the valleys. Then bad weather with snow came on, our provisions ran out, and we had to scurry home without getting anything. Canada Geese, Arctic Blue-birds, Goosanders, Pipits, and Audubon's Thrushes breed up there, but the mountains were buried in snow, and it snowed hard during part of our stay, so we did not get any of their eggs. Several pairs of Bald Eagles had nests around the lake, but no other Raptors were seen. A large flock of Velvet Scoters was on the lake: could they breed there? Mallards were breeding; no other Ducks or Loons. Blue Grouse common at timber-line on mountains: I shot nine in a few hours. I also took the nest, with two eggs, of *Geocichla nævia*. I think that only one nest of this Thrush has been found before—in Alaska. The eggs are large and handsome, like those of *Turdus musicus*, but the spots are light brown instead of black. These were about the only noteworthy facts, although we must have travelled over 80 miles."

The Parliamentary Report on the British Museum for the present year mentions the following important acquisitions in the Class of Birds during the year 1894:—1482 birds, representing about 50 species, chiefly of the family Tanagridæ, from various part of America; presented by F. D. Godman, Esq., F.R.S., and Osbert Salvin, Esq., F.R.S. 183 birds from Nyasaland, presented by H. H. Johnston, Esq., C.B., amongst which are the types of a new Parrakeet (*Agapornis liliance*). 86 specimens from the Shan States, including the types of a small Flower-pecker (*Ixulus clarkii*) and of a Scimitar Babbler (*Pomatorhinus imberbis*), new to the collection; presented by E. W. Oates, Esq. 55 skins and 61 eggs, including two species new to the collection (*Anthus infuscatus* and *Lanius fuscatus*), from Foochow; presented by C. B. Rickett, Esq. 115 birds from Luzon, Philippine Islands, including the types of 15 new species and three others new to the collection, presented by the subscribers to the Whitehead Expedition Fund. 65 specimens from Bongao and Sibutu Islands, Sulu Archipelago, including nine species new to the collection and the types of four species (*Scops sibutuensis, Prioniturus verticalis, Dicæum sibutuense,* and *Edoliisoma everetti*), collected by A. H. Everett, Esq.; purchased. 173 specimens collected in Borneo by Mr. A. H. Everett; received in exchange. 171 specimens from Palawan, Borneo, &c.; presented by A. H. Everett, Esq. Five birds from Mount Dulit, N. Borneo, including the type of a new Falcon (*Falco ernesti*), collected by C. E. Hose, Esq.; purchased. A rare Owl (*Gymnoscops insularis*) from the Seychelles, new to the collection; presented by Chevalier Brooks. The type specimen of *Pœoptera kenricki*, from Northern Masai-land, new to the collection; presented by Major R. W. E. Kenrick. A pair of flightless Ducks (*Nesonetta aucklandica*) from Auckland Island, a pair of Mantell's Apteryx (*Apteryx mantelli*) from North Island, New Zealand, and a pair of a new Bird of Paradise (*Trichoparadisea gulielmi*) from Finisterre Mountains, New Guinea, new to the collection; presented by the Hon. Walter Rothschild. 60 bones of birds, mostly belonging to extinct species, from Chatham Island and New Zealand, including the types of seven new species, collected by Mr. H. O. Forbes; purchased.

The total number of additions to the Class of Birds in 1894 was 6423.

We have heard, with great regret, of the death of Henry Thornton Wharton, M.A., M.B.O.U., of whom an obituary notice will be given in our next number.

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PRINTED BY TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

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